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EMCO "1001" REGULATOR

for a Thousand and One Uses in the Gas Industry

Regulators developed in the past for gas pressure control have been directed to some specialized installation such as the Appliance Regulator where normal, low distribution pressures must be regulated to lower, even combustion pressures, or such as the Service Regulator where high distribution pressures are reduced to lower, safe house line pressure.

There is an increasingly large field of control problems not met by this type of specialized equipment. The EMCO "1001" Regulator is designed for these thousand and one types of applications. With it, it is now possible to control pressure with a high degree of accuracy for any outlet setting from 2 oz. up to 20 lbs. having rates of flow up to 30,000 cubic feet per hour or more depending upon inlet pressure.

Now, within a single assembly, is available a design to satisfy the vast majority of control problems encountered.

Employing advanced design principles and modern materials, this unique product is winning a prominent place in the distribution and utilization of gas.

A complete description of the EMCO "1001" Regulator with operating diagrams in full color, is given in Bulletin 1059. Write for a copy today.

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MERCO NORDSTROM VALVE CO.
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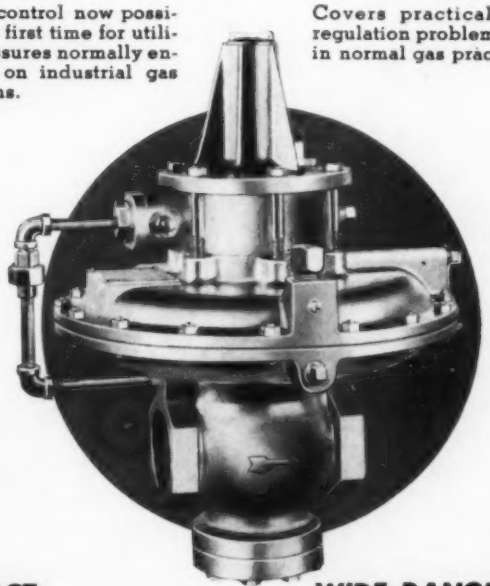
EXTREME ACCURACY OF CONTROL . . .

Precision control now possible for the first time for utilization pressures normally encountered on industrial gas applications.

COMPLETE ADAPTABILITY . . .

Covers practically all the regulation problems met with in normal gas practice.



COMPACT DIMENSIONS . . .

Provides simple installation with respect to both space and connections.

WIDE RANGE OF CONTROL . . .

Extreme accuracy now obtainable within the same assembly for outlet pressures ranging from 3 inches of water up to 20 lbs. per sq. in.

This cast iron gas main, recently uncovered in Philadelphia, has been in service for more than 100 years and is in prime condition—good for at least another century.

Cast iron pipe has benefited, of course, from improved metallurgy and production methods since distribution engineers laid cast iron gas mains a century ago. Yet these mains survive. The modern stuffing-box type mechanical joint, as developed by CIPRA members, still further improves the service of cast iron pipe under modern working pressures. Mechanical-joint cast iron pipe means a *bottle-tight* line — long-lived and economical.

CAST Q IRON

Look for the "Q-Check" registered trade mark. Cast iron pipe is available in sizes from 1¼ to 84 inches.

A mechanical joint being assembled—one of several designs, identical in principle, made by our members—all bottle-tight under modern pressures.

THE CAST IRON PIPE RESEARCH ASSOCIATION, THOMAS F. WOLFE, RESEARCH ENGINEER, 1015 PEOPLES GAS BUILDING, CHICAGO, ILLINOIS

CAST IRON PIPE

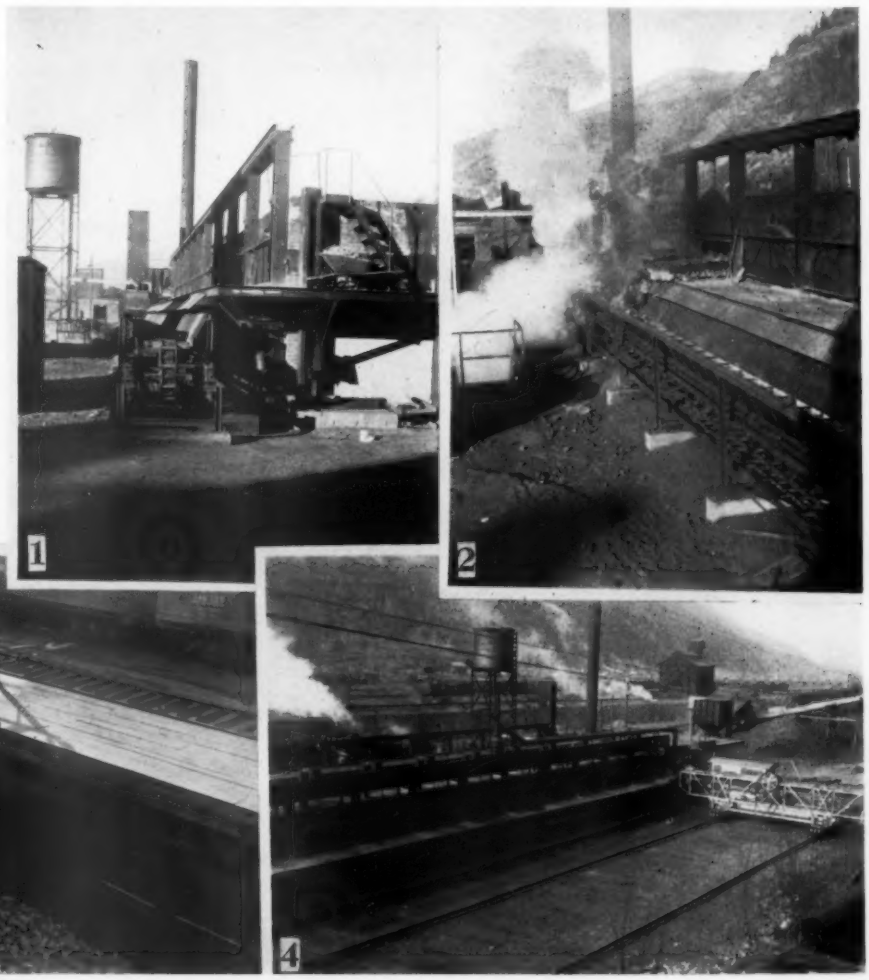
STANDARD MATERIAL FOR UNDERGROUND MAINS

CURRAN-KNOWLES GAS AND COKE OVENS

CURRAN-KNOWLES OVENS

AT MICHEL, B. C.

1.—Conveyor Trough which receives hot coke. 2.—Discharging hot coke into trough. 3.—Coke on coke wharf after discharge from conveyor. 4.—The pusher side of ovens, showing pusher and leveling machine.



THIS PLANT now operating at Michel, B. C. on low volatile expanding coal demonstrates the usefulness of the Curran-Knowles oven for handling expanding coals. The coke being produced here from low volatile coals has been found to have the same high degree of reactivity as the cokes produced from high volatile coals.

The Plant operating at Owen Sound demonstrates the applicability of this process to the gas industry where experience shows that small sized screenings from gas coals can be carbonized to produce a high quality domestic coke and a uniform quality gas. The use of such small sized screenings permits a substantial saving in the cost of coal, while at the same time the improved quality of the coke creates a greater revenue from coke sales.

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These ovens are built to suit any situation, —large or small. Simplicity of design makes for low operating cost.

Our descriptive bulletins show plants now in operation and products. Write for them.

COAL CARBONIZING COMPANY

BANK OF COMMERCE BLDG. ST. LOUIS, MO.

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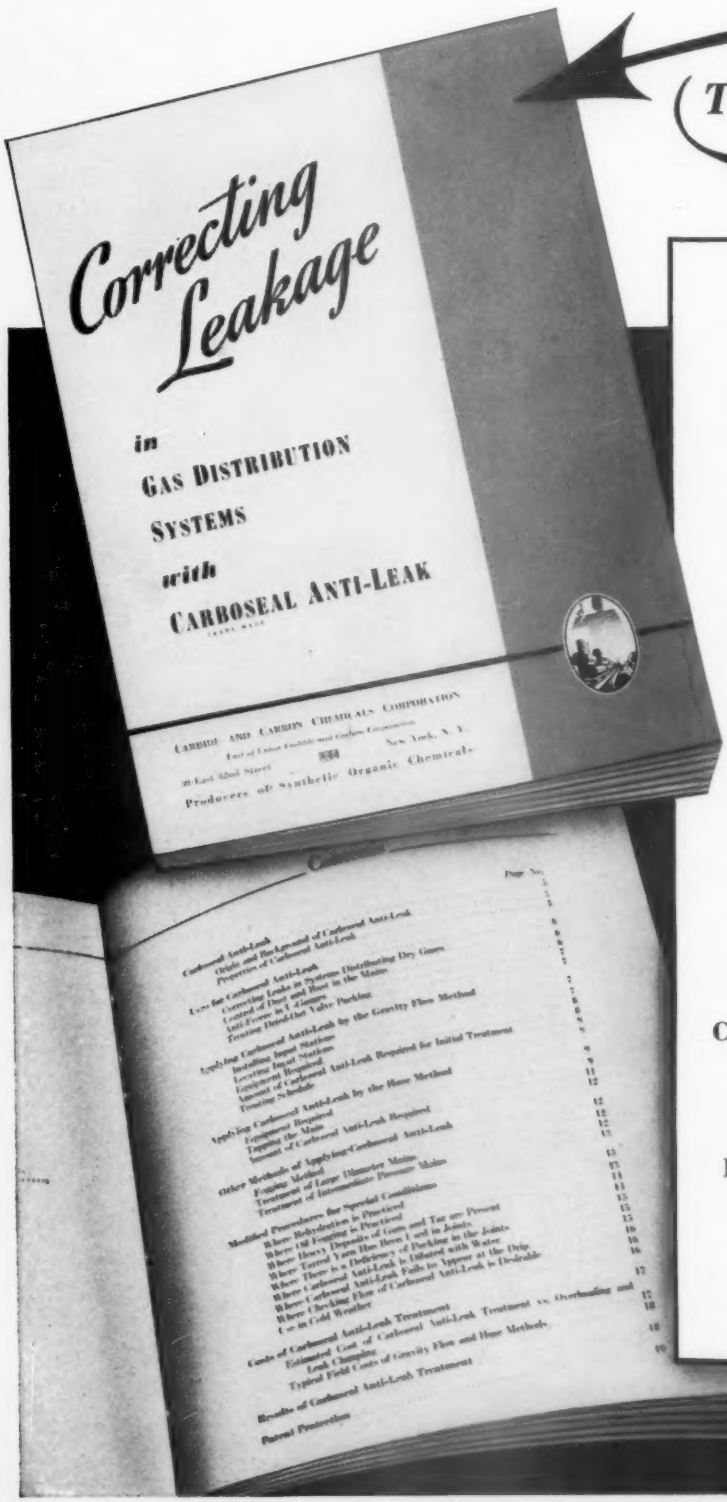
LEAKAGE in Dry Bell-and-Spigot Joints can be corrected at LOW COST!



This New Book Tells How!

THIS book is full of information about "Carboseal" anti-leak, the scientifically developed liquid for correcting bell-and-spigot joint leakage in distribution systems carrying dry manufactured or natural gas. It incorporates in compact form all the essential facts about "Carboseal" anti-leak, the methods of application, comparative costs, and results obtained.

The use of "Carboseal" anti-leak has now become a routine procedure in the maintenance programs of 250 gas companies. Their experience indicates that the average cost of "Carboseal" anti-leak is $90 per mile of 3-in. equivalent main.

Send for this book. Possibly this inexpensive and economical method of correcting joint leakage can be used to advantage in your system. A request on your company letterhead will bring you a copy, without obligation.

The word "Carboseal" is a registered trade-mark of Carbide and Carbon Chemicals Corporation.

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Unit of Union Carbide and Carbon Corporation

UCC

30 East 42nd Street, New York, N. Y.

Producers of Synthetic Organic Chemicals

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APRIL
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AMERICAN
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Gas Company Progress

By
Hall M. Henry
Assistant to the President,
New England Gas and Electric Association.

PROGRESS in an industry is measured in terms of Sales and Net Earnings. If we look at the Manufactured Gas Industry figures which show Gross Revenues down 11.3% from their 1930 high and Net Operating Income (before Taxes and Depreciation and Interest) down 32% we might conclude we have made little or no progress. Yet when Mr. Kellogg, President of Edison Electric Institute, points out that the Electric Industry has made a gain of 18% in Gross Revenues since 1929 but also has made a three and one-half billions capital investment during this period and has $37,000,000 *less* Net Earnings available for a return on its *total investment* we wonder what price progress? Or if we look at industry in general we find it is down 25% to 30% from its 1929 high vs. our 11.3% and we must conclude the Manufactured Gas Industry is pretty good. In fact, as pointed out in *American Gas Journal* for March, 1939, by former American Gas Association President Conrad N. Lauer, our Industry has been outstanding as an industry of stability, —maintaining during the low point of the depression payrolls within 21% and employees within 18% of 1929 levels whereas other industry was off 58% on payrolls and 47% in employees. Today Gas Industry payrolls are 101% and employees 98% of 1929 vs. industry in general showing payrolls back to only 90% and employees 94% of 1929. Yes, we have much of which to be proud.

Are We Doing as Well as We Know How?

However well we as an industry might compare with other industries we New Englanders should ask ourselves have we progressed as well as we should? We should question why it is that the New England companies' Gross Revenues are down 18% vs. 11.3% for the Industry and Net Operating Income down 34% vs. 32% for the Industry? Have we been too complacent about our Gas Sales curves or even about our Operating Expenses? Are we really doing all we can or are we like the farmer when asked to buy a book on how to improve his farming methods replied "What would I do with more knowledge of farming? I am not now doing *half* as well as I know how." It would seem when we look around and find some of our sister companies showing Appliance Sales yearly of

Is the Gas Industry making Real Progress, and have its Policies proved to be Sound and Constructive? Mr. Henry Answers these Questions very Definitely and very Affirmatively. His Paper was one of the High Lights of the recent Annual Business Conference of the New England Gas Association. We commend it to the Attention of our Readers.

HALL M. HENRY

7/10 to 1% of their customers sold House Heating
2% to 5% of their customers sold Automatic Water Heaters
2% to 5% of their customers sold Gas Refrigerators
1% or more of their customers sold kitchen heaters
5% to 10% of their customers sold Gas Ranges

and when we find some have been able to bring their Gross Revenues 15% to 20% *above* 1930 levels and Net Operating Incomes to the highest levels in the history of their companies with their Net Operating Income per Customer being $20 to $25 vs. an Industry average of $14 we either aren't "doing half as well as we know how" or else we need to learn how we too can make greater progress.

New England Is Different

But you say New England is different. Yes, it is, but we should be thankful that it is what with 7% of population we have 8% of the Nation's wealth—11% of the capital resources in banks and 18% of the savings deposits in the United States. Did I hear some one say—we have this larger share of the wealth and

capital resources of the Nation because we are thrifty? However that may be, apparently these savings have not prevented our buying 8% of all the retail goods of the Nation or 25% more than the National average. But that is not all from a gas man's viewpoint, we have a potential heating and kitchen heating market that few sections can boast and a refrigeration and water heating market less saturated than other sections. Just think of it—a tremendous market with customers holding more than their share of the Nation's wealth with which to buy and apparently willing to buy when shown they get value for the dollars expended.

Lower Operating Expenses and Increased Sales—Our Need

With such a market opportunity in front of us with such splendid examples of what others have done in increasing sales and net earnings, should we not consider how we too may take advantage of the opportunities that are at our door? The question is what can be done? The adjoining chart will give an outline of some of the possibilities for Reducing Expenses and Increasing Revenues:

With the foregoing as a guide, a study was made of each item listed and action taken by a group of companies with the following result:

What Progress Has Been Made In Reducing Operating Expenses?

Let's take Production Costs.

(a) Change from coal gas to carburetted water gas

One company, after a prolonged study, changed in April, 1937, from coal gas operation to carburetted water gas, using residuum oil. The change required an investment of $322,000. The change resulted in reducing holder cost from 36.9c to 27.2c or a saving per year of $136,000. While this company was justified in making the change, owing to the condition of the plant, and while today it might still be economical to change from coal gas to carburetted water gas, such a change under present oil prices and with a *doubtful* tar market does not offer the same opportunities for economy they did in 1937 or the years 1931 to 1937.

Chart No. I—Curve "A" shows the holder cost of this plant before and after change to carburetted water gas. Curve "R" shows a plant on coal gas throughout this period. The holder cost for twelve months ending December, 1939, was for Plant R 34.5c and was 26.1c for Plant A but this is with $1.08 per barrel for oil and coke $7.65 per ton. In 1940 oil on contract will average $1.42 per barrel and coke $7.90 per ton. If all other factors remain the same holder cost for Company A will increase to 29.7c but will still show a saving of about five cents per thousand cubic feet under Company R. Chart No. 2 shows the trend of Bunker "C" oil prices F.O.B. Boston, as submitted to the writer by Mr. C. S. Young, Manager of the Springfield Gas Light Company. If past trends are indicative of future trends then on a long range point of view Bunker "C" oil in carburetted water gas plants are justified *provided a decent tar credit can be realized. The tar credit is the crux of the situation.*

(b) Change of Oil effects savings

In the period from June to September, 1938, various types of oils

- (A) Reducing Expenses
  - Production
    - (a) New gas making processes
      - (1) Coal gas to water gas
      - (2) Refractory Screen
    - (b) Changing quality of oil
    - (c) Use of soft coal
    - (d) Use higher % of Reform
    - (e) Reduce steam costs
    - (f) Generator lining maintenance
    - (g) Reduce purification costs
    - (h) Study performance of best companies
    - (i) Increase residual credit
    - (j) Uniform accounting interpretation
    - (k) Generator fuel
  - Distribution
    - Servicing
      - Charge for
      - Use better tools
      - Training
      - Add charge to cover during warranty
    - Unaccounted-For
      - Leak clamps
      - Carboseal
      - Flow controls
  - New Business
    - Lower inventories
    - Break even policies on installations
    - Salesman compensation
    - Higher markups
    - Unnecessary personnel
    - Check on performance
- (B) Increasing Revenues
  - 4-R Program
    - Retention
      - Appliance Sales
        - Type to sell
        - How many
        - To what group
      - Rate Adjustments
        - Should they be increased?
        - Should they be more promotional?
    - Replace Competitive Fuels
      - Salesman Power
        - How many
        - Specialized or general
        - Compensation plan
        - Training
      - Special Inducements
        - Delayed billing for off-season sales
        - Low down payments
        - Appliance refunding agreements
        - Allowances
        - Long terms
        - Free trials
        - Combination sales
    - Recovery
      - Appliances Not in Use
        - Location
        - Means of putting back in service
        - Home service
      - Appliances Replaced by Competitive Fuels
        - Location
        - How to recover
    - Raise Use
      - Existing Appliances
        - More home making
        - How to use
        - Recondition
        - Home service

were investigated and in September it was decided an oil having certain specifications as to sulphur, tar and enriching value would produce additional economies. Various percentages of Reform were tried out to determine the percentage that would give the lowest costs. In four gas plants it is estimated this change in oil has saved annually..$101,721.00.

Much of this economy has been recently eliminated through a 10c per barrel premium placed on this particular oil. However, these four companies did have full advantage of these savings for one year and if the change had not been made the companies would have been that much worse off.

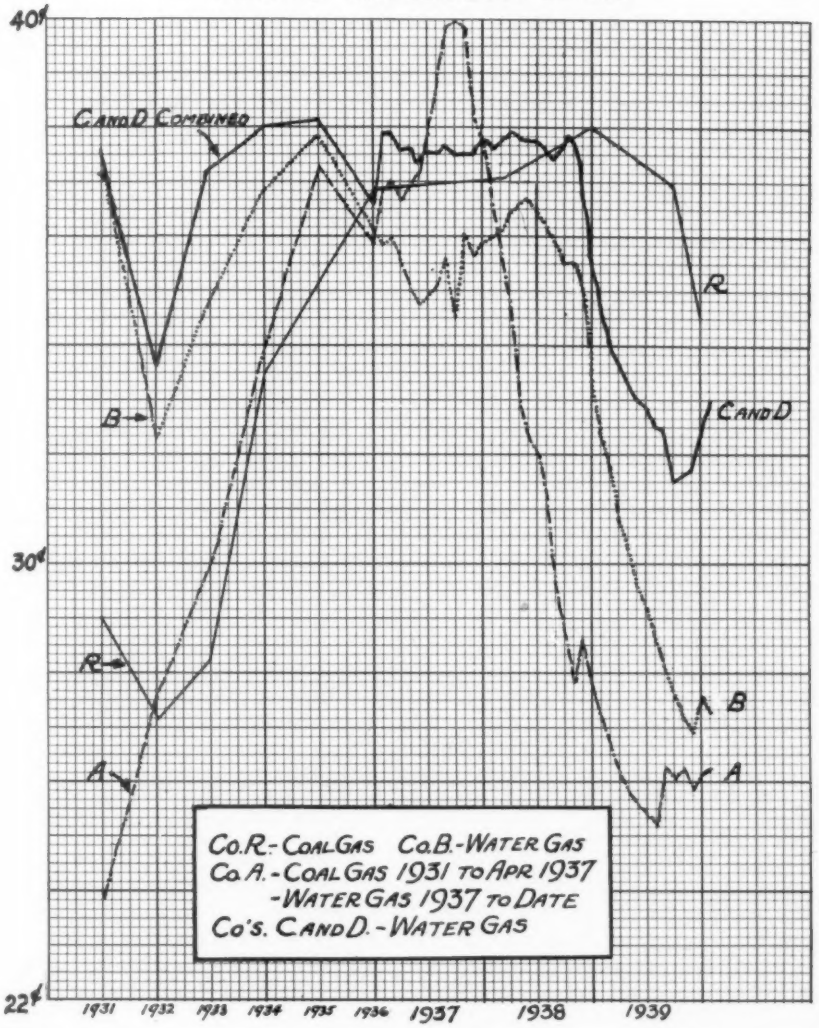
(c) Tar Dehydration Costs Reduced

A study of the residual credit from tar disclosed dehydrating costs were larger than necessary. A revision of the contract enabled the Tar Company to install more efficient dehydrating equipment which has effected annual savings in all four plants of $25,000.00

(d) Refractory Screen with Soft Coal Saves 1 Cent to 1¼ Cents

After several months' investigation in December, 1938, the Refractory Screen Grid of Combustion Utilities Corporation was installed in one plant. This installation was made for the purpose of enabling the use of soft coal without making objectionable smoke. Mr. Pease of New Bedford reported on this process at the recent Operating Division meeting. Suffice to say here that on checking with previous operating costs in New Bedford it is estimated a saving of from one cent (1c) to one and one-quarter cents (1¼c) per thousand cubic feet has been realized. Comparison with two other plants are as follows:

CHART 1 - HOLDER COST OF GAS



		M.C.F. Annual Make
* F.O.T. Costs Plant A (12 Months)	.1616	1,503,058
F.O.T. Costs Plant B (6 Months)	.1645	1,698,912
F.O.T. Costs Plant C (12 Months)	.1517	1,002,778
F.O.T. Costs Plant C (5 Months)	.1468	Coal 28%
Coke @ $8.86—Coal @ $6.60—Oil @ .031—Tar @ .04		
Annual Savings in New Bedford of		$12,000.00

(e) Purification Savings

A Cottrell installed in two plants in 1938 reduced Oxide fouling with annual savings of $6,000.00. Since the first of this year Cottrells were put in operation in two other plants thus bringing annual savings in all plants to $12,000.00. Total investment Cottrells, $47,700.00. These Cottrells were installed in last two up as existing mains are now filled to some extent with foreign matter.

* *Fuel plus oil, less tar credit.*

(f) Air Changes

A study of the operating results of two plants using the same kinds of Generator Fuel and Oil and making about the same quantity of gas in similar generating equipment showed one plant had a lower Generator Fuel and Oil per M.C.F. than the other. A careful check of operating cycles and air quantities and pressures showed only difference was in air available and pressure. Changes in blowers to increase volume of air and in piping to reduce pressure drop brought about an improvement but there still remains an appreciable difference in results.

F.O.T. Costs Plant A	$0.1616
F.O.T. Costs Plant B (Before)	0.1712
F.O.T. Costs Plant B (After)	0.1645
Saving	$0.0067

Further studies are under way to see if air volume and pressure still account for the poorer results in the one plant over the other. Savings thus far $9,500.00/Year

(g) Boiler Fuel Economies

At various times minor savings have been found possible through special buys of certain boiler fuels. One plant is now using (and thereby obtaining a substantial saving) a 50-50 mixture of Buckwheat Size No. 4 and Barley anthracite screenings. Save $9,750.00

One plant found it could brick up certain boilers in the back at a cost of $600 with estimated savings of $1,800.00/Year

(h) Generator Lining Savings

One company found it could double the life of its clay generator lining by cleaning side wall clinker, only, when shutting down for a thorough overhauling. They carry a higher fire to make up for loss volume due to the side wall clinker. Save $1,000.00/Year

Effect on Holder Costs

The effect on holder costs of all these steps, plus better fuel prices is shown in Chart I. (These are twelve months' average figures ending each month.) The larger maintenance items show up quite prominently as in many instances the unusual maintenance items came in a one month's period.

Lower Production Costs—Possible

In Gas-Age for January 18, 1940, Mr. Pollard of the Portland Gas and Coke Company of Portland, Oregon, says "We have within the past two years erected an oil-gas and by-products plant which has reduced our costs of gas in the holder from around thirty cents (30c) per M.C.F. to less than twenty cents (20c) and we hope very shortly to have it down to fifteen cents (15c)." This company is selling more than $1,000,000 worth of by-products each year, included in which are 1,500,000 gallons of motor fuel benzol, 1,500,000 gallons of tar and 50,000 tons of briquets, and such chemical products as Naphthalene, Toluol, Sulphur and Carbon Bisulfide. Here is certainly encouragement of a high order for companies that can use an oil-gas plant. It has been stated by many a prominent gas executive that our Industry must become a chemical industry if we really want to have a low gas production cost. Apparently Portland, Oregon, is following this advice, using oil as a base. Others will undoubtedly go further with coal than they now have, and in the end we should have a very much lower production cost, which will enable the tapping of larger gas markets. Certainly there has been and is being currently made real progress in lowering production costs.

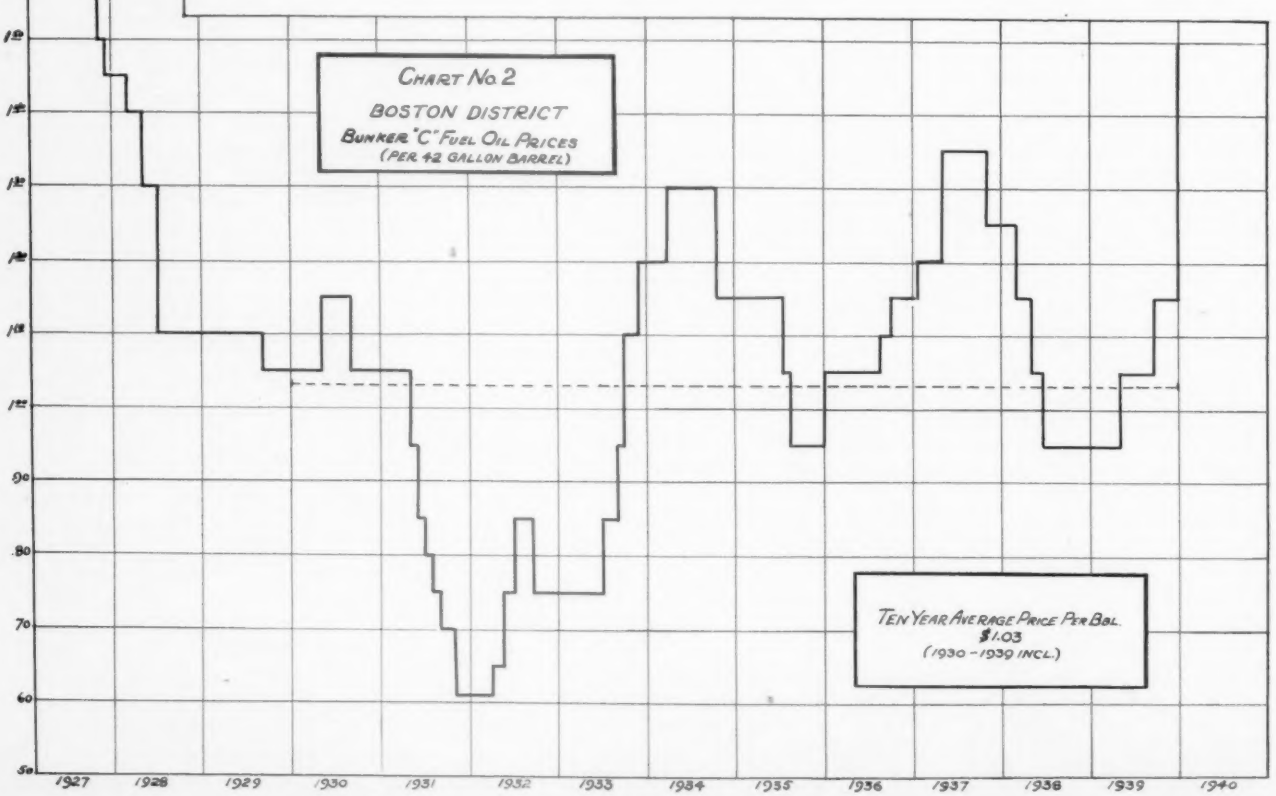
Research on Production

It is unfortunate that we here in New England do not have a research program on gas production. Most of us are using carburetted water gas and about the same types of fuels and oil. So why shouldn't we as an Association or a group of interested companies set up one or two research projects each year and assign to one or more companies to test out and report back—the expense to be shared? For instance, if, as is claimed, preheated air offers an opportunity to save two cents to three cents per M.C.F. representing savings to New England companies distributing carburetted water gas of $540,000 to $720,000 per year why not let's cooperate on a test to prove or disprove the value of preheated air? There are other promising opportunities, but every one seems to be waiting for some one else to start. Let's ask the Directors to set up a Research Program on Gas Production. We will gladly cooperate on any promising research activity with any group of gas companies or manufacturers should the Association decide it cannot sponsor such a program. Only by attacking this problem will we get anywhere—so let's make a start.

What of Progress in Lowering Distribution Costs?

Reducing Unaccounted-for Losses

In order to reduce the Unaccounted-for losses leak clamps are being used where found desirable. At this time the installation of some twenty-seven (27) Cleveland Flow Controls is being undertaken, the function of these is to reduce pressures when the gas loads go down and in-



crease pressures as loads build up. The lower pressures during off-peak periods reduce the Unaccounted-for as much as 30% to 50%. The controls will cost $17,300.00 but are estimated and *guaranteed* to save $21,000.00 per year. Mr. Drake of Utility Management Corporation gave complete report on Flow Controls at a recent Operating Division meeting. One company has also experimented with Carboseal on some 16" and 20" mains but found this ineffective due to wet gas and possibly also the size of the main.

Charge Servicing During and Out of Warranty Reduces Expenses

In order to reduce work on consumers' premises two new service policies have been established. First: To the sales price of each appliance a sum has been added to take care of servicing *during warranties* and these additional charges are credited to cost of servicing customers' appliances. The sums set up in case of Ranges and Water Heaters represent the actual cost (as found by study) of servicing these two appliances during warranty. The other charges are somewhat lower than actual but represent the amount it is deemed advisable to set up at this time. These charges with warranties set up are as follows:

Range	One (1) Year		$2.00 Warranty Charge
Automatic Water Heater	One (1) Year	$2.00	Instantaneous $3.00
Refrigerator	Five (5) Years		$3.00 Warranty Charge
Heating Appliances	Three (3) Years		$3.00 Warranty Charge

These warranty charges will save, based on selling 11,600 appliance units in 1940, approximately $25,000.00 per year.

The second policy applies to appliances *out of warranty*, and is as follows:

(1) No longer is unlimited free service given on House Heating. The Heating burner or boiler is cleaned once per year and lighted in Fall. All other works and parts charged for.

(2) An *annual insurance service agreement* covering *parts* and *labor* is available on all Domestic and House Heating appliances and is as follows:

Range			$2.00 (No enameled parts)
Automatic Water Heater	$3.00		Instantaneous $ 5.00
Refrigerator			$2.00
Kitchen Heating			$3.00
House Heating			$10.00
House Heating, Range plus Automatic Water Heater			$13.00
House Heating, Range plus Instantaneous Water Heater			$15.00

(3) Where an appliance is not covered by an insurance contract and where *a part is involved* a charge is made for *both parts* and *labor*.

(4) In Cambridge the Gas Company has gone one step further and charges for *all* appliance servicing where the appliance is the cause of the trouble *whether* a parts replacement *is involved* or *not*. This policy has been in effect since June 1, 1939, the charges being as follows:

One Dollar ($1.00) for first Half Hour
Fifty Cents (50c) for additional Half Hour
One Dollar ($1.00) Minimum
10% Discount for Cash

Results of Charge Service Policy House Heating

First: The charge service policy on House Heating has not affected sales.

Second: The cost of servicing House Heating in the one company where the policy has been in effect long enough to get a year's study shows the House Heating Servicing cost as follows:

Cost to service House Heating/Job before Policy	$16.00
Cost to service House Heating/Job after Policy	6.65
Saving/Job due to new Policy	$ 9.35

In another company an eight months' study showed House Heating servicing $5.23 per job vs. $17.75 prior to charge policy or saving on job of $12.52 per year.

Third: Approximately 60% of the Heating Customers have taken the $10.00 annual insurance service contract.

Estimated Yearly saving on Heating Jobs *Out of Warranty* $13,000.00.

Domestic

The charge policy in Cambridge has resulted in no serious criticism. Naturally there have been complaints but none but what could be handled satisfactorily. The interesting points are as follows:

Total Service Calls Reduced	41%
Total Free Calls Reduced	25%
Revenue Secured per Call	$1.41

The free calls include all calls made during warranties (this was before new Warranty Policy went into effect); also all Heating calls not charged for (cleaning and lighting burners) and policy calls. The following will give a picture of the revenues received—7 months' period:

Actual Revenue Received from Servicing Calls (7 mos.) on annual basis $6,431.00 or estimated $11,000.00.

The *cost* of rendering the above service was about equal to the revenue received. This is at it should be as it is not the intention to produce a profit on charge service. However, the company has realized a saving since they formerly rendered this work free of charge.

The charge for labor where a part is involved went into effect January 1, 1940, in the other companies. This step is estimated to save annually $10,000.00

Effects of Service Policies Not Fully Realized

The above policies on servicing have not as yet effected any substantial saving, the reason being that first the companies extended until January, 1943, the date when gas refrigeration warranties would expire. Second, the companies do not have a large number of water heaters on their lines or for that matter a large number of House Heating or Kitchen Heating jobs *out of warranty*. However, the policies adopted represent a constructive step toward minimizing servicing costs *in the future*. When we consider service costs have risen from an average for this group of companies of 50.6 cents per customer in 1928 to $1.15 per customer in 1938 there is cause for real concern for the future of these costs, especially when this group of companies is *greatly accelerating appliance sales*. However, the above steps taken regarding appliances *out of warranties* save annually $34,000.00

What Is Cumulative Saving In Operating Expenses?

The progress made in lowering operating costs can be summarized as follows:

Production Savings	$308,771.00
Distribution Savings	80,000.00
	$388,771.00

These combined savings are equal to approximately three dollars ($3.00)

per customer. Of the total approximately $300,000 has already been realized thus leaving some $88,000 to be reflected in future earnings.

Reducing Expenses Not the Answer

These figures are naturally quite gratifying. However, all companies are now confronted with increased fuel and labor costs which will materially reduce the effect of these economies. They raise the question —So What? So we *cannot* depend on reduced expenses as the sole means of increasing our Net Operating Income. This further emphasizes the need for increasing our Gross Revenue. If we can add revenues at reasonable rates *fast enough* we can withstand normal as well as abnormal increases in expenses such as are now occurring. Furthermore, when a depression again confronts us we can expect lower fuel prices to sustain our Net and overcome any loss in Gross Revenues. Here lies our salvation.

Here is What Has Been Done —Heating Sales

One group of companies decided in 1938 that they must increase their revenues if they wanted *lasting prosperity*. The question was—could sales be increased and at a reasonable cost? It was decided to test the House Heating market for an answer. To eliminate the buying factor element a company was selected which was considered a most difficult one to sell in on account of the *low employment record*. Furthermore, in order to extend the benefits of gas to the largest number of customers a new House Heating rate was filed in July, 1938, (resulting in an estimated rate loss of $7,800.00) reducing average rate from 66 cents to 54 cents. The company budgeted 255 Heating jobs to be sold between July, 1938, and June, 1939, and they sold 254. They increased manpower from 1½ to 10. The actual *Salesman Years* of effort was 8.7 or sales per *Salesman Year* $\frac{254}{8.7}$ = 29 Heating jobs. These results proved customers wanted gas heating and would buy even when business conditions were not too favorable.

(*Note*: A study of House Heating sales for a number of gas companies showed that thirty (30) Heating jobs could be secured for each *Salesman Year* of effort so this company figured ten (10) men X thirty (30) would give them three hundred (300) sales and allowing for turnover and lost time training new men they set two hundred and fifty-five (255) jobs as a quota. In figuring Salesman Years *all people* in the Heating Department are included. Thus a company employing seven (7) House Heating salesmen—two (2) engineers and one (1) supervisor for a full year would have 7 plus 2 plus 1 = 10 *Salesman Years* of effort.)

	Salesman Weeks	Salesman Years	Heating Jobs Sold	Jobs Lost	Net Sales
1937	364	7	191	45	146
1938	741	14.2	267	27	240
1939	1498	28.8	864	63	801

What of Expense?

The House Heating sales expense increased ($9,469-4,596) $3,451.00 over the preceding twelve months' period and they secured $21,447.00 *more* Heating revenue as a result of the larger sales effort than during the preceding year. This additional revenue of $21,447.00 was obtained, therefore at a cost of only $\left\{\frac{\$\ 3,451}{\$21,447}\right\}$ 16 cents per dollar of Annual new Heating revenue. This is quite low for additional load. The *total* cost per dollar of Annual Gross Revenue added was $\left\{\frac{\$\ 9,469}{\$21,447}\right\}$ 44.2 cents or about a dollar of expense per dollar of Annual *Net Revenue* (if we figure 44 cents out of every dollar of Gross is Net). This is what we have estimated we could afford to spend.

What is of further interest the company's operating report never reflected the effect of the rate reduction, because of the rapidity with which new load was added.

Progress Made in Expanding Heating Sales in Other Companies

This experience was so satisfactory from a volume and cost standpoint that the other companies in the group decided to reduce heating rates and greatly increase their selling efforts. Thus, by April and May of 1939 new House Heating rates were in effect in all companies. These rates were designed somewhat differently from those in the preceding company as it was considered desirable to extend the benefits of gas to the *small home market*. Thus, the rates were designed to give the *small* home the *same average rate per M.C.F. for heating gas* as the *large* home. The annual rate loss in the remaining companies amounted to $30,000.00 and the average rates were reduced from 66 cents to 50 and 55 cents per M.C.F. for heating gas. Salesman power in all companies was increased from seven salesmen used in the early part of 1938 and sixteen used in the last six months of 1938 to where thirty-seven were being used in 1939 on Heating sales only, or one Heating salesman per 3,600 customers. These thirty-seven salespeople were what were considered necessary (based on 30 jobs per Salesman year) to sell some 1,000 Heating jobs if they were kept selling Heating for a full year. Actually the sales effort on Heating in 1939 was 1498 Salesman Weeks or 28.8 Salesman Years, showing the thirty-seven salesmen were not on all through the year.

Salesman Power 4 Times 1937

The progress made in selling House Heating is clearly shown by the above table where salesman power in 1939 is four times that used in 1937.

Net sales of 801 jobs represent 6/10th of 1% of the total meters. Since filing the new rates in *all companies* 1041 Heating jobs have been sold whereas before the expansion of sales effort there were 1338 Heating customers. Thus, in nine and one-half *company* months on the new rates 80% as many Heating customers have joined the swing to gas as did so as a result of endeavors over the entire previous 12 years of *selling gas heating*.

What is of greater interest the permits for oil burners have decreased from *122* in December, 1938, to *34* in December, 1939, in one of the companies studied. We understand in towns where such aggressive gas heating sales activities have not been undertaken oil burner permits show an increase.

What of Expense?

House Heating Net Sales Expense increased from $25,396.00 in 1938 to $52,765.00 in 1939 or an increase of $27,369.00. The Estimated Annual Gross Revenue increased from $34,-620.00 to $106,130.00. Thus, while in 1938 it cost 74 cents per dollar of Revenue added in 1939 it cost just under fifty cents (50c) per dollar. Or to express it another way, the

(Continued on page 40)

Florida Public Service Company Goes "Ranching" in 1939

Unique Gas Sales Campaigns Click in Prosperous Pre-Depression Style

A twelve-month overture to a record breaking Florida season was staged in 1939 by the Gas Sales Department of the Florida Public Service Company of Orlando. Three unique and dramatically successful campaigns have proven the superiority of this Central Florida concern serving 6,500 customers, in the merchandising of modern gas refrigerators, ranges and water heaters in territory providing stiff competition.

Climaxing four previous overwhelming triumphs in Annual A.G.A. Refrigeration Campaigns, the 1939 Public Service crew trimmed its sails well and again scudded across the finish line a national winner in 1939 with 258 Electrolux installations for 6,500 meters. This record was sufficient to best all other entries in Division 3 of the A.G.A. competition. In addition, the Florida Public Service Company showed its wake to competitors for the A.G.A. Group 3 Sectional Award and Weyman Cox carried off a Ship's Bell Clock and $75.00 as the leading retail salesman in America in his particular division.

Pictured above are the miniature corrals and ranch house during the early days of this quota busting range campaign. Leading gas salesman during the Round-Up Campaign was E. R. Schmickle, who totaled 66 sales to make 126% of his quota.

This leading Florida gas company made its second home-run in the early fall when it swapped sextant for spurs and rode herd on gas customers during the Old Range Round-Up. Always a successful activity, the 1939 campaign topped predecessors. Two hundred and seventy-eight sales, 4% of total customers, were successfully corraled in a 60-day drive by four full time and five part time selling "cowhands." One of the outstanding features of the fall Round-Up was a miniature ranch house and cattle range built in the gas company's showroom. The range was stocked with a certain quota of miniature cows. As sales were made cows were removed from the open range and placed in the salesmen's corrals. This unusual floor display created widespread interest.

The final successful drive of an extremely successful merchandising year for the Florida Public Service Company, was the "Time is a Factor" water heater sales effort. Despite the fact that the campaign consumed only 36 days, the selling force again surpassed its quota by selling 100 heaters to 6,500 total customers. Of the total gas water heaters sold, more than 50% were equipped with Monel metal tanks. Leading salesman in this concluding drive was E. R. Schmickle with Weyman Cox, A.G.A. Refrigeration Campaign winner, a close second. The low cost of gas water heating for baths and other uses was emphasized in the campaign advertising and window display material.

The success achieved by the Gas Sales Department in adding more than 8,228,000 cubic feet to the annual gas load in 1939, was largely due to the astute supervision of A. H. Bruning, New Business head, and H. Stuart Johnston, Gas Sales Supervisor—aided and abetted by cooperative departmental assistance. Increasing load during 1939 has necessitated expansion of the Orlando Gas Plant under the direction of Superintendent Sholar.

The successful 1939 sales drives are a tribute to the confidence and energy of H. R. Cloud, Vice-President and General Manager of the Florida Public Service Company.

14th Annual Business Conference
The New England Gas Association

NOT content to rest on an enviable past record, The New England Gas Association again went forward at its Annual Business Conference this year to present a particularly timely set of papers, to hold an excellent exhibit of gas equipment and appliances and to attract an attendance exceeding that of any other Conference in its history.

As usual, the Conference was held at the Hotel Statler in Boston and took place on March 14th and 15th. The number who registered was 628—about 25 per cent more than last year.

The appliance exhibit, first in the Association's history, was put on by 35 manufacturers, listed elsewhere, and was well handled. The opinion was generally expressed that it had been well worth all the trouble and expense that had been put into it. There was one notable feature,—the exhibit was closed while the Conference was in session.

Elsewhere in this issue we publish in full the remarks of Walter C. Beckjord, President of the American Gas Association, and the outstanding paper of Hall M. Henry on "Gas Company Progress."

President Rutherford in his address took occasion to quote from the addresses of previous presidents of the Association:

"I. T. Haddock, President in '33, quoted, 'In the trade association, we find the natural evolution of an instrument to meet continually changing conditions. Industries now need more than ever a coordination of knowledge and experience within themselves.'

"Hall Sterrett in '34 quoted, 'We live in a world whose only permanency is change. No industry can afford to harbor the delusion that it is immune to the effects of change. The business highway is strewn with the wrecks of enterprises that stood "pat" while the procession moved on.'

"Fred Goodwin in '35, 'For several years there has been a discussion as to whether or not it would be desirable to have an appliance exhibit at our Annual Meeting.—I think there are possibilities in this idea.'

"Bob Knowlton in '36, 'There may once have been a time when comparatively speaking our industry was handicapped by a position of semi-monopoly but the passage of time has changed all this so that today we are sharply competitive as any. A realization of this situation will have marked effect on our practice of the pricing art—will strengthen courage, will justify experiments that many years ago would hardly have been classed as conservative and finally will necessitate continuous study and attention as contrasted with periodic review.'

"Frank Ball '37—'I have seen the operation in all its phases and I have been heartened by the many practical things which the various units have accomplished for the gas industry. Certainly—the New England companies appreciate the value of cooperative efforts directed toward front-line problems.'

JOHN A. WEISER
President N.E.G.A.

"Les Fletcher '38—'If we here in New England face our problems, not with the spirit of right but with the spirit of fight, our hundred year old industry will continue its progress. We have faced harder problems in the past and successfully met them.'

"George Hawley '39—'My purpose at this time is to call attention to some of the things which cause me to believe most emphatically that our industry is not only a continuing, deep rooted, modern necessity, but it is destined to move forward more rapidly than ever as one of the greatest industries of service in the country today — most essential, useful and beneficent.'"

Finally Mr. Rutherford himself said: "After such close contact with the Divisions and their Chairmen, the many Committees and the Board, one thought recurs most frequently, how much of individual and company success could really be traced directly or indirectly to Association activities. I have long felt that association work gives far more to the individual than he contributes. This has been confirmed in my own experience during the past year."

Best Paper Awards

The following awards are made for those papers presented by an employee of a member company during the past fiscal year, which papers were judged by the directors of each Division to be the most valuable and the second most valuable to the New England gas industry. Our member companies are indebted to these men for the contribution they have made to the gas industry in preparing and presenting these papers before the respective Divisions.

Accounting Division

Most Valuable "Unit Desk Plan of Customers' Bookkeeping" by L. A. Mayo, Supervisor of Local Accounts, The Connecticut Light and Power Company.

Second Most Valuable "Installing Customer Billing System on Punched Cards" by M. F. Young, Supervisor of Customer Billing. The Connecticut Light and Power Company.

Industrial Division

Most Valuable (Joint Award) "Selling Small Furnaces" by W. Wirt Young and Herman Koester, Jr., both connected with Charles A. Hones, Inc.

Second Most Valuable "Gas House Heating—Past, Present and Future" by L. H. Knapp, Chief Industrial Engineer, Blackstone Valley Gas and Electric Company.

Operating Division

Most Valuable "Portland's Experience in Changing From Coal Gas to Water Gas" by George S. Steere, Assistant Manager, Portland Gas Light Company.

Second Most Valuable "Boiler Feed Water Treatment" by E. F. Walsh, The Narragansett Electric Co.

This group photograph taken at the 14th Annual Business Conference of New England Gas Association:—Front row, left to right:—A. C. Kenney, Boston, Asst. Sec., Hall M. Henry, Cambridge; J. A. Weiser, Newport (incoming President); R. J. Rutherford, Worcester (outgoing President); C. G. Young, Springfield (1st Vice Pres.); John West, Boston, (2nd Vice President).

Middle row, left to right:—F. M. Goodwin, Boston; I. T. Haddock, Cambridge; G. W. Stiles, Portland; W. C. Slade, Boston: H. R. Sterrett, New Haven; C. H. Cummings, Boston; R. D. Stuart, Jr., Fall River; F. D. Campbell, Cambridge.

Back row, left to right:—Clark Belden, Boston, Exec. Sec.; M. J. Coughlin, Hartford; R. L. Fletcher, Providence; F. L. Ball, Boston; N. B. Bertolette, Hartford; A. E. Norton, Boston; L. E. Knowlton, Providence; R. D. Hawkins, Bridgeport; D. H. Levan, Lowell.

Sales Division

Most Valuable "The Retail Salesman in the Gas Industry" by George S. Jones, Vice President and General Manager, Servel, Inc.

Second Most Valuable "Standing Still or Going Ahead?" (a paper on employee training) by Wallace G. Strathern, Director of Sales Training, The New England Coke Company.

Exhibitors at the meeting were:

American Bosch Corp., American Radiator & Standard Sanitary Corp., Cribben & Sexton Co., Detroit-Michigan Stove Co., Eastern Appliance Co., Eastern Refractories Co., Inc., Estate Stove Co., Florence Stove Co., General Gas Light Co., Glenwood Range Co., Handley Brown Heater Co., Hardwick Stove Co., Holyoke Heater Co., Mine Safety Appliances Co., Mulcare Engineering Co., Inc., National Tube Co., Pittsburgh Water Heater Corp., Pittsburgh Equitable Meter Corp., Reznor Manufacturing Co., Roberts-Gordon Appliance Corp., Roberts and Mander Stove Co., Robertshaw Thermostat Co., George D. Roper Corp., Ruud Manufacturing Co., Herbert H. Skinner, The A. P. Smith Manufacturing Co., The Sprague Meter Co., Standard Gas Equipment Corp., Sun Water Heater Corp., Tappan Stove Co., Nathaniel Tufts Meter Works, Wailes Dove-Hermiston Corp., Waverly Heating Supply Co., Whitehead Metal Products Co., The Wilcolator Co., John Wood Manufacturing Co., Inc.

New Officers and Directors of The New England Gas Association. Elected at 14th Annual Business Conference

Officers

President: J. A. Weiser, The Newport Gas Light Company; *1st Vice President:* C. G. Young, Springfield Gas Light Company; *2nd Vice President;* John West, New England Power Service Company, Boston; *Treasurer:* F. D. Cadwallader, Boston Consolidated Gas Company; *Clerk:* Clark Belden, Executive Secretary, The New England Gas Association.

Directors

Directors-at-large: W. C. Bell, New England Power Association, Boston; N. B. Bertolette, The Hartford Gas Company; F. D. Campbell, New England Gas & Electric Association, Cambridge; C. H. Cummings, The Industrial Appliance Co. of N. E., Boston; E. M. Farnsworth, Boston Consolidated Gas Company; H. M. Henry, New England Gas & Electric Association, Cambridge; L. E. Knowlton, Providence Gas Company; D. H. Levan, Lowell Gas Light Company; A. E. Norton, Nathaniel Tufts Meter Works, Boston; H. B. Noyes, Manchester Gas Company; P. J. Rempe, Stone and Webster Service Corp., Boston; D. S. Reynolds, Boston Consolidated Gas Company; H. R. Sterrett, New Haven Gas Light Company; G. W. Stiles, Portland Gas Light Company.

Ex Officio Past Presidents: R. J. Rutherford, Worcester Gas Light Company; G. S. Hawley, The Bridgeport Gas Light Company; R. L. Fletcher, Providence Gas Company; F. L. Ball, New England Power Service Company, Boston; R. H. Knowlton, The Hartford Gas Company.

Division Chairmen: The following men, as next year's Division Chairmen, are Association directors, having just been elected by the members of their respective Divisions:

Accounting: M. J. Coughlin, The Hartford Gas Company; *Industrial:* R. D. Hawkins, The Bridgeport Gas Light Company; *Manufacturers:* G. D. Yeaton, Detroit-Michigan Stove Company, Boston; *Operating:* W. C. Slade, New England Power Service Co., Boston; *Sales:* R. D. Stuart, Jr., Fall River Gas Works Company.

The Gas Industry at the Crossroads

By

Walter C. Beckjord

President A.G.A.
Vice-President and General Manager
Columbia Gas & Electric Corporation

AS I LOOK BACK over more than thirty years' active experience in the gas business, I am impressed with two things,—first, that we have made remarkable progress in the sale and utilization of our product in which the development of long distance transmission lines supplying natural gas to large industrial centers has played no small part; and second, that we are still largely talking about the same kind of problems we did years ago. That point comes clearly to my mind as I review the papers I wrote over ten years ago covering the problems of that time.

We have kept pace with the progress of the times, and we have to a great extent properly met our competitive situation. We have developed comparatively small domestic science corporations into large industrial units supplying service of every sort to domestic, industrial and large power consumers. The industry as a whole outranks the steel industry in total investment, and has taken its place as one of the great achievements of a most remarkable generation of progress.

However, size alone does not necessarily mean perfection. Sometimes it may be a disadvantage. We have tackled each problem in turn, and as we realized we were losing ground in certain quarters, such as lighting, for instance, we immediately made new ground in fields that were formerly untouched. In turn, cooking, water heating, house heating and refrigeration were developed and now air conditioning is on the platform. This latter activity, however, will require most careful handling as it involves more engineering problems than all the others put together, and to date there has been a lack of comprehension of the problems involved, which has undoubtedly retarded progress in that field.

The fundamental problem, however, of selling our industry to our customers and the public at large is still with us, and still a problem. There has been perhaps too much taken for granted, too much complacency.

Presented at the 14th Annual Business Conference, New England Gas Assn., Boston, March 14-15th, 1940.

The Chain of Change

I made a statement in an address some time ago to the effect that changed habits of living, in diet, in home building, growth of the apartment house and the use of the automobile, had made a noticeable difference in our domestic sales. A syndicate writer picked up the statement and wrote an article on it, commenting on the hundreds of instances in other industries where this had been so. The change in women's clothing, wool to cotton, cotton to silk, the elimination of petticoats, and scanty clothing generally, different hats, entire change in styles, wooden ships to steel ships, horse and buggy days giving way to the automobile, etc. He rather poked fun at us for wailing about our troubles and said that was our business and we would have to learn to take care of ourselves. I think that's about right. This is a busy world and no one has time to feel sorry for any one else. It is still true that everyone has troubles—plenty of them, so let's stop talking about ours and do something about surmounting them—just like Hamlet did.

WALTER C. BECKJORD

I quote in part the editorial in order to illustrate an outside viewpoint:

"The cotton textile industry, for instance, had no way of knowing that women were suddenly going to stop wearing three petticoats at a time and content themselves with one filmy slip; but they did, and the demand for cotton textiles is a good many million yards less today than it would be otherwise. Nor could the baking industry foresee that these same women would decide that bread was fattening—and thereby knock a sizeable hole in the annual sales of that commodity.

"You could go on citing such examples all day, and when you got through you would begin to understand why business executives so often get gray hair. Ordinary competition a business man expects. He can meet that; it's part of the game. But when some new habit or idea suddenly carries his customers entirely away from the whole industry of which he is a part, he is next to helpless.

"Such shifts are characteristic of American life. They offer fortunes to the men who can foresee them and get in front of them; but they mean the biggest kind of trouble to the men who get caught in the squeeze."

Public Relations

We have made excellent progress in public relations but we still have many things to learn. The moving picture business, automobiles and radio, have shown us methods of salesmanship which make us look like the hare and the tortoise combination. I recall recently when I attended a performance of "Gone With The Wind," in a mid-western city. It so happened that our tickets were for the previous night's performance. With all the mob trying to get in the theatre, a little problem like that didn't daunt the theatre manager. He had the ushers get out a few extra chairs and what might have been an unpleasant incident, became an extra accommodation. I thought at the time of the endless argument that might have occurred on such a situation in our business. Granted it cost nothing to put in the few chairs, but the point is the situation was solved to the customer's satisfaction.

After all, we have to give good service. We wouldn't stay in business if we didn't. We should accept that as a fact and proceed to

other things to more firmly cement our customer relations. Above all we should make them feel happy to spend a portion of their monthly budget with us. I have often looked at a dirty, torn dollar bill, and thought of the many pleasant things I could exchange it for. We are merely trading our time for the other fellow's when we spend our money and that process should be one of mutual satisfaction.

Many of us now in this business can look back to the days when we read by kerosene lamp and candle light perhaps, and chopped kindling for the kitchen stove,—walked to school. But, we wouldn't be content to do that any more. Let us all remember, however, that there are many ways of doing the same thing, more than one make of automobile and horse racing, in which a radical difference of opinion is involved, yet is still a national sport, and a popular one.

There have been many sins of omission and commission in the long and fast moving and creditable history of the utility business, and I don't propose to get into a long political discussion of our troubles. There has been too much of that already. We have made some sound investments, and made progress for the benefit of the customer as well as the industry. On the other hand, no one can always be right. Someone has said if you can be right 50% of the time you are above the average.

Stimulation Through Meetings

I want to take just a little time to speak of the benefits to be derived from just such meetings as these, and for the coordination of effort toward the welfare and progress of the industry through the manifold activities of the American Gas Association, and the various geographic associations which go along with it. A great deal of patient, time-consuming, faithful effort has gone into each step of progress that this or any other industry has made in improving its product, and rendering better service to the public. This is to be expected and we wouldn't be doing our job if we did otherwise. No one can live by himself, and we all get into ruts. We need the inspiration that contact with our fellow man gives us, and the opportunity for exchange of ideas is too valuable to lose. But let us get away from the all too prevalent habit of wishful thinking, and do some straight thinking on the real issues involved.

The outstanding accomplishments of the last few years have largely been fostered in the activities of the A.G.A. National advertising has fulfilled a long felt want, and is telling our story of progress to the consuming public in a way that is bringing results.

The C/P range is an achieved fact, sponsored by A.G.A. committees and with the cooperation of the manufacturers. There are over 115,000 in service now, and fully that many more will be sold this year. This effort has improved the entire line of cooking facilities, and has made possible a kitchen unit which is perhaps superior to anything on the market for the preparation of food. It has certainly stimulated our competitors which is the best evidence of good accomplishment.

The A. G. A. Testing Laboratories have done an outstanding job not only in acting as the watchdog on safety of appliances, but in definitely improving their efficiency, adaptability and appearance. The efficiency of top burners has been doubled and oven control and other automatic features have been made almost perfect. Without organization and coordination these things could not have been done.

House Heating and Refrigeration

House heating which was formerly scoffed at as undesirable, dangerous to load factor and to peace of mind on cold days, has been perfected until it is an accepted fact in new home design. Units are put in closets in small houses with no basements, and in some cases the cost of heating a home for a whole winter is less than $60 per year. It has filled a receding gap in the load curve due to changes in other classes of business, and some companies are holding their peak load at the same point after five years' experience with house heating, thereby proving that house heating has merely replaced other loads presumably lost or discontinued.

Refrigeration took fifteen years of patient and painstaking effort, often against great discouragement in the early days, but now it is an accomplished fact not only in new business but in the replacement market as well. It took courage and initiative to put that across and the Consolidated Edison Company of New York and the Servel Company are entitled to the everlasting gratitude of the gas industry for carrying that job to a successful completion.

Air conditioning is perhaps in the same position now as refrigeration was ten years ago, but it is more of an engineering problem and the factors will have to be worked out with great care. Many mistakes have been made but we are still on the right track. It is a real problem that challenges the best brains in the industry. Much constructive work has been done already and the A. G. A. has fostered definite research work in conjunction with the Corey Hill Hospital in Boston.

Competition a Stimulus

Over the years in the development of this great mural painting which is America, many industries have been started, have climbed to dizzy heights of fame and then burned out like a fallen meteor. Their name is legion. A study of the stock market lists of ten or twenty years ago will show a number of industries now practically forgotten. Even in my day, the traction business, first thought to be the tops in the utility business, has now dropped back into a form of subsidized elevator service in most places. The horse and buggy days are memories to most of us, and the old-fashioned razor is almost a museum piece, but the gas industry has successfully survived its many vicissitudes and is going forward stronger and more aggressive than ever. Competition has only served as a stimulus to not only better but cheaper ways of doing things. While the struggle has not been without its casualties, the progress has been constant and upward, as a study of the curves plainly shows.

There has not been enough money spent on improving our utilization equipment and facilities, and adapting our product to meet modern conditions in the home. Any business that can invest nearly $5 for each $1 of gross and survive this far can afford to spend over 5% of its gross on new business effort and more than 1% of its gross on advertising. An investment in selling our business will pay bigger returns every time than some of the monuments we have erected in misplaced office buildings and outmoded methods of production. The appliance manufacturers cannot be expected to do it all. Many of them have done more than their share.

If we are to keep up in the forefront of an age that is moving as rapidly as this one, we must get up the courage and spirit that is necessary to meet competition intelligently and satisfy our customers and not live in memories of the past when it was felt that we were a monopoly that nothing could displace. That theory has gone the way of starched collars —it just doesn't exist any more.

Things are moving so fast now that tomorrow becomes yesterday before the calendar actually indicates that fact.

Keeping Abreast with Progress

The progress of the gas industry has kept pace with the march of time and we are still in the front rank, but this isn't enough. Momentum has probably had something to do with it, and we must be a little more sensitive to the needs of the times to keep up with the procession. We have survived so far in excellent shape and have hung up a record of which any one can be proud. But, that isn't going to be sufficient for the future. The problem is a little broader, considerably so, than one of simple economics. It involves the whole range of political and social philosophy and we cannot be content to hide our candle under the bushel. We must consider the whole range of essential activities involved in any struggle for the survival of the fittest, and in the struggle we must all play our part, for it isn't a one-man job. It needs the whole army to carry on.

A statistical analysis of any industry is most interesting, and it certainly indicates very clearly what has happened in the past. The conclusions drawn from such an analysis, however, do not always foretell the future. Other factors must be added —vision, resourcefulness and courage.

Statistics Speak

We are now in the 124th year of the founding of the gas business in this country, and during that time the population of this country has increased from something less than 10,000,000 people or about 4.5 persons per square mile, to over 132,000,000 or over 41 persons per square mile. We now have nearly 16,500,000 gas customers or 65% more than the entire population when it was started.

The earliest record in 1860 shows sales of about 4,000,000 cubic feet, whereas in 1939 there were 362,590,000 MCF of manufactured gas sold and a total of 2,263,000,000 MCF of natural gas. The peak year for manufactured gas was in 1929, 524,115,000 MCF sales, and 1939 was the largest in the natural gas industry.

Contrast this with the sales of anthracite coal for instance, which started with 66,000 tons average per year in the period 1821-1830, rose to a peak of 99,612,000 tons in 1917 and in 1938 dropped to 46,099,000 tons. Bituminous coal averaged 75,000 tons in 1821, rose to a peak of 579,386,000 tons in 1918 and dropped to 344,630,000 tons in 1938, not much more than one-half of the peak production. Crude oil production in 1861 was 2,479,000 barrels; in 1929, 1,007,323,000 and in 1938, 1,213,200,000 barrels.

Railroad passengers carried in 1891 averaged 546,762,000, rose to a peak in 1920 of 1,269,913,000 and now in 1938 is 454,508,000.

Motor car passengers increased from 1,778,000,000 in 1930 to 3,961,510,000 in 1938, thereby illustrating what has happened to railroad passengers carried.

Freight tonnage in 1891 was 692,446,000 tons, rose to a peak in 1918 of 2,477,092,000 tons and in 1938 dropped to 1,482,504,000 tons.

The number of telephones in use in 1895 was 339,500, rose to a peak of 20,068,000 in 1929 and in 1938 was 19,885,000.

Kilowatts generated in 1902 amounted to 2,507,000,000 and in 1938, 123,000,000,000.

A typical index of large manufacturing in the U. S. is steel ingots and castings which increased from a tonnage of 389,799 long tons in 1871, to a peak of 56,433,473 long tons in 1918, and is now back to 28,350,000 long tons in 1938. In the depth of the depression in 1932, it dropped to 13,681,162 long tons.

I think these are enough statistics to show that the gas industry has been very stable, showing substantial gains over the years. There are 16,500,000 gas ranges in use, exceeding by over 2,000,000 the number in use in 1929. Over 1,500,000 gas refrigerators have been sold since 1929 and about 900,000 central-fired house heating jobs installed. These figures show that the gas industry has not been asleep. It has been awake to competition and the record has been a good one, even though there has been a decrease in domestic consumption caused largely by changed habits of living.

New Markets

Like other industries, however, we must meet the ever changing cycle by first finding new markets, and second by increasing the efficiency and adaptability of existing appliances. Air conditioning comes under the first heading and much constructive work has already been done, particularly in commercial application, but much remains to be done to increase the efficiency and reduce the installation cost for domestic installations. There is considerable engineering work to be done yet, and the problem is by no means a simple one, but it is well worthy of your study and in my opinion it may well develop into a very desirable summer load although it will by no means offset the winter house heating peak. It involves a consumption of 40,000 to 50,000 cubic feet per season for air conditioning as compared to three or four times that much for house heating.

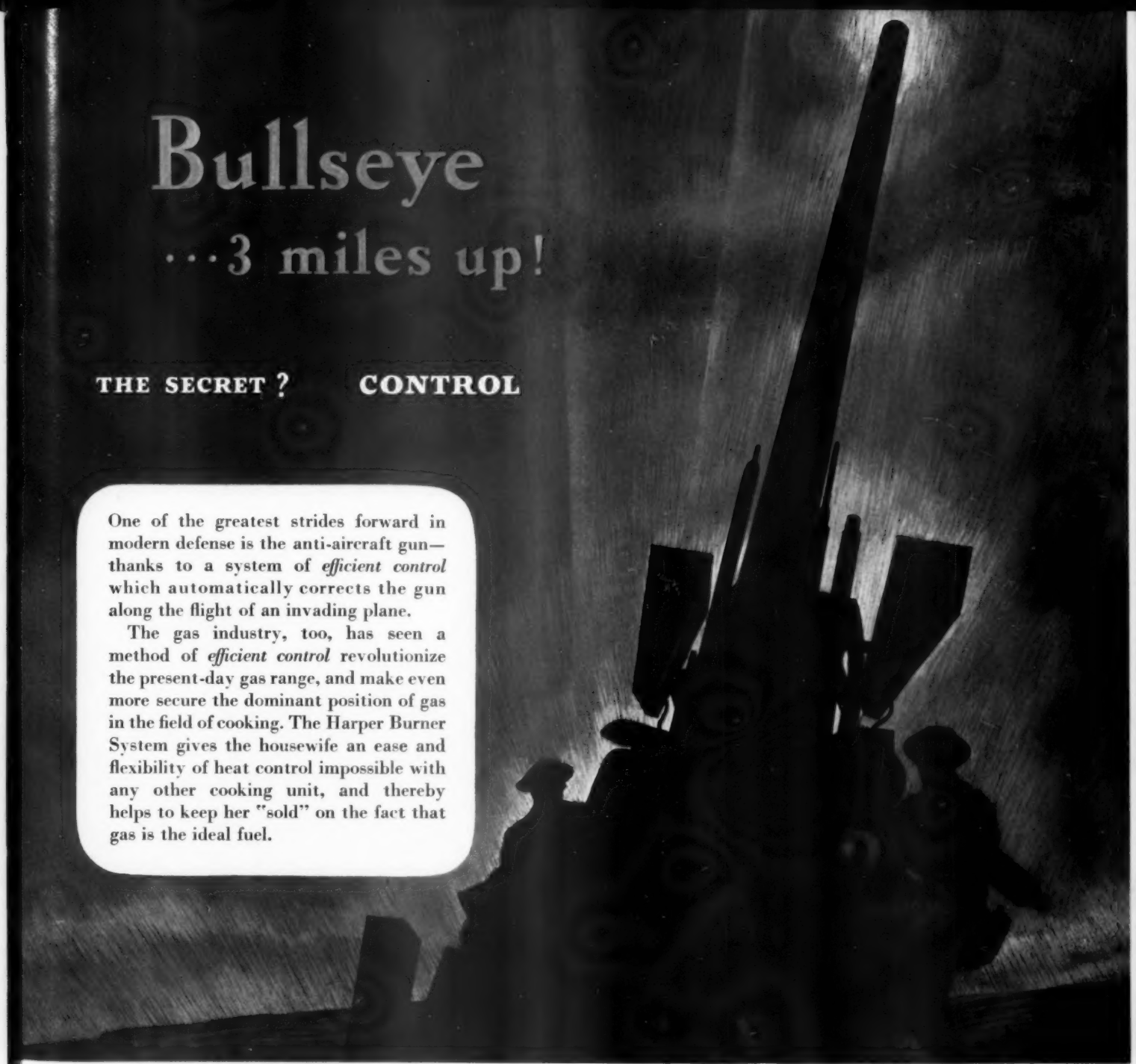
For the second item, increased efficiency of appliances, a great deal has already been done, but more can be done. There have been some very interesting developments in orifice application for top burners. The offset orifice developed on the Pacific Coast has been utilized in changeover operations with great success, and the Sebald orifice looks as though it had great possibilities. C/P specifications for water heaters and house heating units are being studied and it may well be they will equal the development in the C/P range.

Market surveys have clearly demonstrated that in some localities automatic water heaters are no longer used by the customers as such, but only at intervals in order to save gas. Increased efficiency will keep this as well as a study of the proper rate schedule. The gas industry probably suffers from some old-fashioned rate as compared with the more up-to-date promotional and objective rate in our fellow utility.

Dealer Cooperation

With all the competition we have in highly developed electrical appliances on the one hand, and mechanical equipment for using low-grade fuels on the other, a study of appliance sales shows the gas industry has held up fairly well, but a broader plan of dealer cooperation and time-payment sales will undoubtedly show results commensurate with the success some of our competitors have achieved. We certainly must be up-to-date in our sales methods or we will be left at the hitching post. The very comprehensive jobber-dealer organization in the electric industry has contributed immeasurably to the tremendous sale of their appliances in every conceivable place,—drug stores, department stores, hardware, corner merchants, 10c stores and the like.

There is very little that is new in what I have said. It is a repetition of the things we all know and have heard about many times, but some times, we are a little slow to act and let the other fellow get the edge on us, because we may think there is something mysterious in his methods



Bullseye ...3 miles up!

THE SECRET ? CONTROL

One of the greatest strides forward in modern defense is the anti-aircraft gun—thanks to a system of *efficient control* which automatically corrects the gun along the flight of an invading plane.

The gas industry, too, has seen a method of *efficient control* revolutionize the present-day gas range, and make even more secure the dominant position of gas in the field of cooking. The Harper Burner System gives the housewife an ease and flexibility of heat control impossible with any other cooking unit, and thereby helps to keep her "sold" on the fact that gas is the ideal fuel.

CONTROL *is the secret here, too*

● The Harper Burner System is a patented invention whereby each of the burners on the range is actually 2 burners in 1 . . . a burner within a burner . . . both operated and controlled by a single handle.

This arrangement affords a high-speed STARTING BURNER to *start* foods boiling and for fast frying . . . plus a small, central, economical COOKING BURNER for *maintaining* the cooking. The COOKING BURNER can be used entirely independently of the STARTING BURNER. No other top burner possesses this vital advantage — which insures easy, accurate control: just the right heat for every type of top-burner cooking . . . every time.

HARPER-WYMAN COMPANY
8562 Vincennes Avenue, Chicago, Ill.

HARPER BURNER SYSTEM

HARPER BURNER SYSTEM

Demonstrates GAS at its best

SEE OTHER SIDE OF THIS PAGE

FACT:

A perfect "Keep Warm" heat *becomes a reality with the Harper Burner System*

REASON:

The Harper COOKING BURNER, when turned low, will keep the contents of a covered vessel at about 150 degrees . . . the ideal temperature for serving. This welcome service cannot be duplicated by any type of so-called "simmer" or Hi-Lo burner. They cannot offer the exact control of heat that is provided by the Harper COOKING BURNER which, operating independently of the complete STARTING BURNER, provides any shade of heat desired, beginning with the merest warming flame. No other burner permits such responsiveness, especially in the range of low heats.

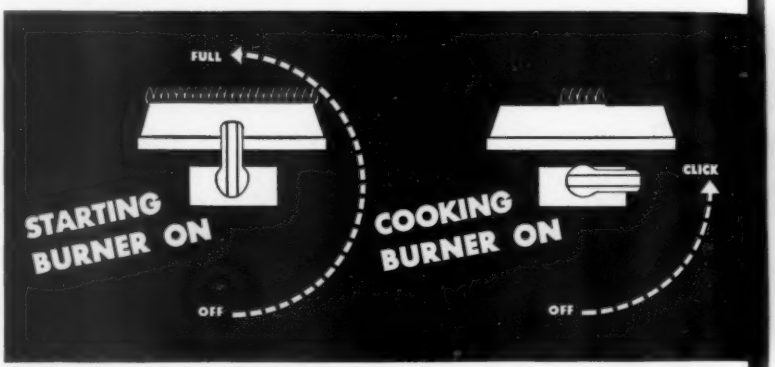
BENEFITS:

The *order* of cooking in preparing a meal is no longer a problem on a gas range equipped with the Harper Burner System. All foods can be started at the same time. As each dish is cooked, the COOKING BURNER is simply turned down to "Keep Warm" heat, and the food will stay at the proper serving temperature . . . without danger of its *continuing* to cook.

Time is saved, trouble is avoided—no more tasteless, soggy food due to over-cooking.

• • •

A simple, non-technical demonstration serves to convince the customer or prospect that the Harper Burner System offers a new and better way to cook . . . convinces the gas industry that here truly is "The best way to demonstrate GAS at its best".



The Harper Burner System provides a burner within a burner. The diagram above shows how the COOKING BURNER operates entirely independently of the STARTING BURNER. Yet both are controlled by the same handle.

We shall be glad to send you, without cost, two booklets that tell the complete Harper Burner System story . . . "Modern Methods of Top Burner Cooking" and "The Greatest Cooking Discovery in 40 Years". They should be valuable to anyone interested in the promotion of gas cooking and gas appliances. *Harper-Wyman Company, 8562 Vincennes Avenue, Chicago, Ill.*

HARPER BURNER SYSTEM

HARPER · BURNER SYSTEM

SEE OTHER SIDE OF THIS PAGE

and success. But, in my opinion, nothing succeeds like hard work, and I suggest we try that awhile.

Problems Still Remain

I have been engaged in the gas industry's activities for a good many years, long enough to see many of my good friends and associates pass on to better things, and I have spent many fruitful and interesting years in A. G. A. activities from which I am sure I have gained more than I have given. In that time I have prepared a great many discussions and papers and have endeavored to discuss the problems of the industry as I see them at the time, and those problems haven't changed much. The point of view has, perhaps, but not the problems. It isn't so important as the years roll on what we say about the problems,—not nearly so important as what we do about them, and even though this is an age of action, it isn't always so easy to get any constructive action toward solving our problems.

We must do more clear-headed thinking about them and not so much wishful hoping that in spite of everything things will still come out all right. That sort of thinking doesn't get us anywhere. Abe Lincoln changed the history of this country when in his debate with Douglas he said the government cannot exist half slave and half free. We won't get anywhere by trying to straddle the fence and hoping that somehow our industry will come out all right. We must do something about it and if after analyzing our immediate problems to the best of our ability we arrive at certain conclusions involving broad concepts of advertising, dealer relations, better methods of selling, research and technical development, cooperation with manufacturers, better customer relations, and a more intelligent presentation of our problems to investors, why let us go out and do something about it. After all it's results that count.

The Trend of Gas Appliance Sales

By

Jared A. Hill

Pacific Gas and Electric Company

IN THE prosecution of a sound business building program it is always necessary to have a certain degree of flexibility so that the plan may be quickly adapted to special conditions as they may arise and at the same time adhere to established fundamental policies. The factors affecting the market development of any business are not static. This is particularly true in the gas appliance business.

When the saturations in any particular market becomes high it is more than ever essential, in planning a continuance of the sales program, to have accurate data regarding the development of that market and the trends prevailing. Probably the best data regarding saturations can be compiled from surveys made by domestic salesmen operating in the territory. These men, as part of their creative field work, may be required to systematically make a minimum number of surveys each week in a routine manner, thus developing prospects for themselves as well as making an inventory of appliances in use. The data appearing in the following chart is a summary of appliance inventories for our system based on 476,000 field surveys:

TABLE 1

Domestic Gas Appliance Saturations

	Number of Appliances	*% Using*
Gas Cooking*	489,143	95.3
Automatic Water Heaters	223,986	53.3
Non-automatic Water Heaters	188,350	42.7
Unit Gas Heaters	208,634	49.6
Central Gas Heating	91,170	21.7

** Includes apartment house customers.*

This indicates a gas cooking saturation of better than 95%. These figures on cooking include apartment house customers as well as residential customers. When the automatic water heater and non-automatic water heater figures are combined it shows a water heating saturation of 96% and the sum total of the unit gas heaters as well as central furnaces shows a saturation for heating appliances of all kinds of better than 70%. It should be pointed out that the saturations on water heating and heating are exclusive of apartment house customers because in apartment houses in our territory the heating and water heating is very largely done from a central plant in the basement and this business is called commercial building heating and water heating. The saturations in this market are also approximately 70%.

A second table shows the trend of total appliance sales in our territory for the six year period from January 1934 to December 1939.

Large increases in the number of units sold each year over the previous year are indicated in all of the appliance classifications with the exception of non-automatic water heaters and radiant heaters. As the saturation of automatic water heaters increases it should normally be expected that the sale of non-automatic water heaters would drop off and with the increase in acceptance of circulating heaters, radiant heaters have become more and more auxiliary devices. Of course, the sale of a large volume of appliances in a well saturated market must indicate a considerable amount of replacement business in addition to the sale of appliances to the few remaining customers who are using competitive fuels.

The sale of forced air or winter air conditioning furnaces has been increasing very rapidly during the

***Abstract of a paper presented at the Los Angeles Spring Sales Conference of the Pacific Coast Gas Association, February 12 to 13, by Jared A. Hill, Pacific Gas and Electric Co., San Francisco, Calif. Mr. Hill showed a number of charts comparing the sale of appliances for the past year with a similar period in 1935 and 1936, but lack of space does not permit their reproduction.*—Editors.**

past three years and resulted in 1939 in the sale of 4620 of these units, which are included in the 13,466 central furnace jobs shown.

Table 2 covers the sales of appliances each year per 1000 customers. This shows a rapid increase from 1934 through 1937 with a slight decrease in 1938 and a strong comeback in 1939 which was the best year since 1932. The most rapid increases were shown in automatic water heaters, floor furnaces and central furnaces. These three appliances reached the highest peak in the history of the company's sales program in 1939.

Data in the study of trends of dealer sales can be secured by breaking down the sales of each type of appliance. This is shown in the following table:

TABLE 2

Trend of Total Appliance Sales and Sales Per 1,000 Domestic Customers

	1934	*1935*	*1936*	*1937*	*1938*	*1939***
Gas Ranges—Total	27,968	37,162	46,386	46,640	45,426	48,767
Sales per M Customers	65.3	84.2	102.4	95.5	90.2	93.6
Auto. Water Heaters	14,807	20,300	27,949	32,079	32,938	37,780
Sales per M Customers	33.6	45.6	62.9	65.6	65.3	72.7
Non-auto. Water Heaters	6,119	5,862	6,005	4,824	3,493	2,712
Sales per M Customers	14.	13.4	13.5	9.8	6.9	5.2
Floor Furnaces	3,709	5,921	8,353	12,077	12,511	16,215
Circulating Heaters	8,312	10,281	12,311	16,603	16,085	15,944
Radiant Heaters	2,516	2,328	2,276	2,198	1,478	1,092
*Sales per M Customers	41.1	55.1	59.6	63.1	59.8	63.8
Central Furnaces	3,415	5,562	9,204	12,026	11,613	13,466***
Sales per M Customers	8.9	12.8	20.2	24.6	23.1	25.9
Total Per M Customers	162.9	211.10	258.60	258.60	245.30	261.20

** This item includes Floor Furnaces, Circulators and Radiant Heaters as Unit Gas Heater sales per M Customers.*

*** 1939 Sales based on first 11 months of 1939—plus December, 1938.*

**** The total of 13,466 Central Gas Furnaces included 4,620 Forced Air or Winter Air Conditioning Furnaces.*

TABLE 3

Analysis of Dealer Appliance Sales For Period October 1, 1938 to September 30, 1939

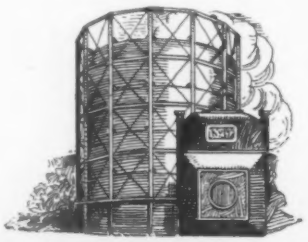
% Sales by Class of Dealer	*Gas Ranges*	*Auto. W. Htrs.*	*Non-Auto. W. Htrs.*	*Radiant Htrs.*	*Floor Furnaces*	*Circulate Heaters*	*Central Furnaces*	*Total Gas Appliances*
97 Sheet metal	0.1%	4.7%	4.0%	4.6%	**44.7%**	8.4%	**84.4%**	**15.8%**
185 Elec. Contrs.	0.8	0.4	0.2	0.7	0.4	0.2	0.1	0.5
271 Plumbers	2.4	**58.7**	**51.6**	16.3	25.1	16.4	6.3	**23.6**
185. Hdwr. Stores	8.6	10.4	10.1	19.0	4.0	14.1	1.8	8.7
139 Furniture Stores	**36.0**	4.5	4.6	13.1	1.6	**24.8**	0.1	**17.0**
255 Appliance Shops	21.3	5.9	3.1	10.6	6.5	12.5	3.5	12.1
43 Chain Store Units	16.9	10.9	21.2	**27.2**	14.6	14.0	2.4	12.7
66 Dept. Stores	11.3	1.4	2.1	4.5	0.9	6.6	0.2	5.4
149 Miscl. Dlrs.	2.6	3.1	3.1	4.0	2.4	3.0	1.2	4.2
								100

Bold face percentages indicate high spots.

The 12 months period selected for this analysis includes the dealer sales from October 1938 to September 30, 1939, principally because it corresponded to a like period in 1935 and 1936 when a similar analysis had been made and it was desirable to compare the two periods. This report includes all of the sales made by the total dealers in our territory as shown on the left hand side of this table. These data indicate very clearly the various groups of dealers who predominate in the sale of each kind of appliance. The furniture stores predominate in the sale of gas ranges and circulating heaters; the plumbers sell more than half of the automatic and non-automatic water heaters; the chain store units sell more than one-quarter of all the radiant heaters sold. As would be expected the sheet metal dealers predominate and almost control the market for floor furnaces and central furnaces.

Because of the larger number of water heaters, heating appliances and gas ranges sold in our territory we find that the plumbers, furniture stores and sheet metal shops account for more than 56% of the total of all appliances sold.

During recent years there has been a very noticeable amount of work done in redesigning, streamlining and adding further conveniences to all of the gas appliances represented in this study. This has brought about a standardizing of designs, sizes and a simplification of installation methods to a point where gas appliances can be easily merchandised without the necessity of maintaining any considerable installation department. This is true of all of the appliances with the exception of floor furnaces and central furnaces and even with these appliances to some extent. These changes should have a tendency to bring about the handling of more appliances by merchants rather than by contractors.



These data are significant because they show the spread of gas appliance sales through retail channels of distribution. These trends should influence the industry as well as the utility in the formulation of their promotional plans, particularly any campaign plans which are to be participated in by a part of the industry or by the entire gas appliance industry.

New Officers For Southern Counties Gas Co.

Directors of Southern Counties Gas Company elected W. J. McCoy treasurer, and Joseph Sodoma assistant secretary, at their meeting March 20th. These positions had been held by Fred Champion, who retires from active service on April 1 in accordance with the company's uniform pension and benefit plan.

Mr. Champion has been identified with the organization since 1913, when he was employed as district agent in Santa Ana. He was elected treasurer in 1934.

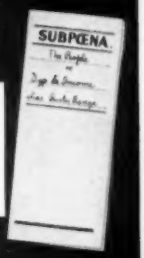
Mr. McCoy is comptroller and director of the company, and Mr. Sodoma is assistant to the vice president and general manager.

Education of Salesmen . . .

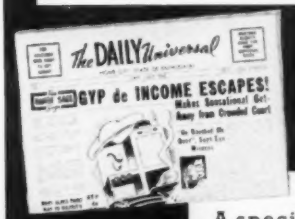
THE MOST IMPORTANT FACTOR IN SUCCESSFUL CP PROMOTION

The true story of the modern gas range, properly interpreted to Mrs. Homemaker is the vital link in modern CP Gas Range merchandising. Education of retail salesmen is the one essential element of any sales program that is based on selling the merit of the product—where reasonable profit per unit sold is desired and in which "cut price" is not the main magnet to attract prospects. Universal for 1940 is glad to undertake the training and education of retail gas range sales organizations, with the assurance that years of experience qualify Universal to adequately fulfill the obligation implied by the promise of—"education of the salesmen."

Universal Sales Manual for 1940 gives a complete story of the modern gas range.



Subpoena Notice—constitutes a unique method of notifying salesmen of sales meeting.



A special Salesmen's Newspaper intended for distribution during period of sales meeting

A Broadside for salesmen that reviews the sales presentation.

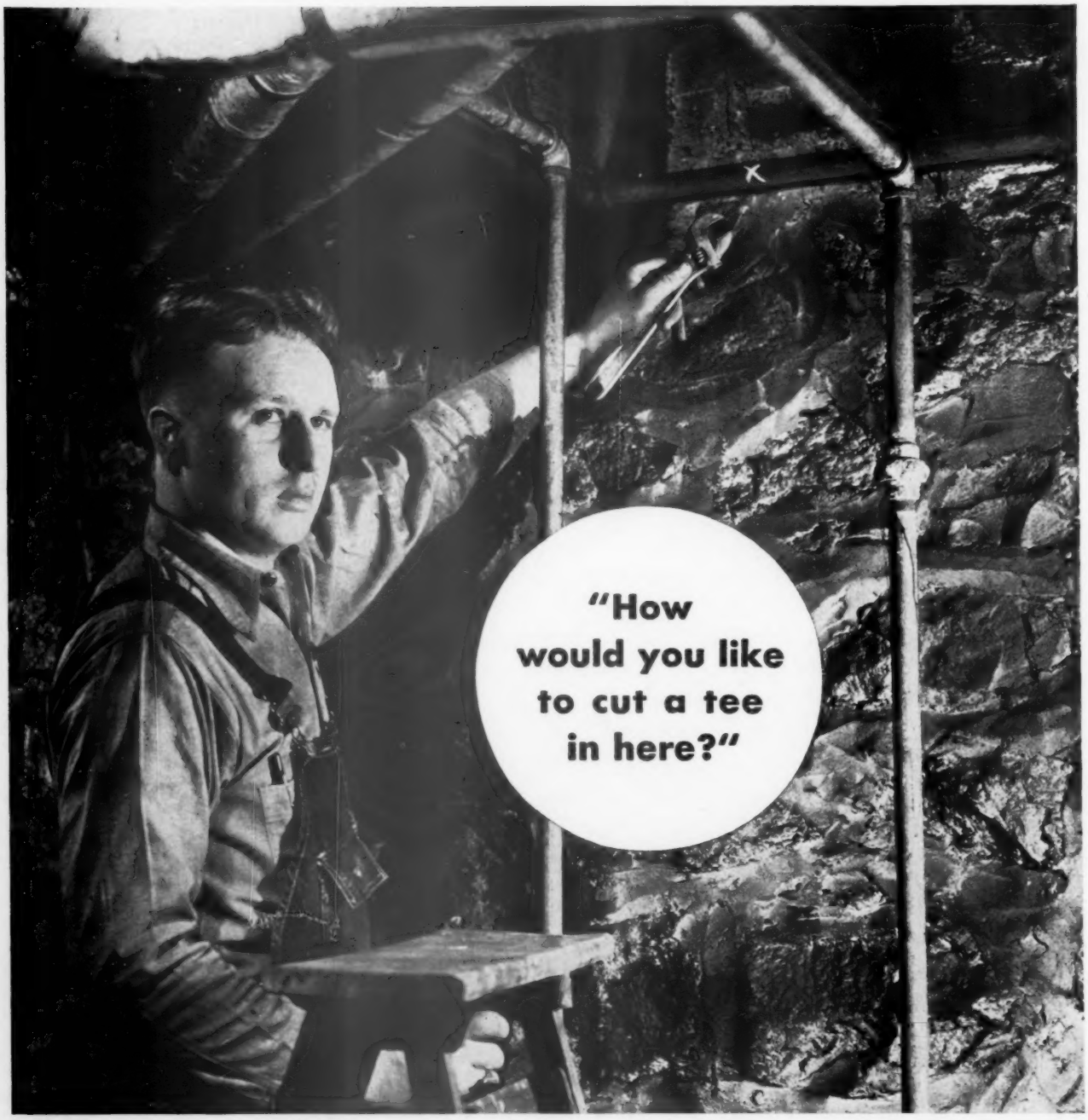
A series of Six Broadsides designed for mailing direct to salesmen's homes—contains pertinent facts regarding the complete service rendered Mrs. Homemaker by the modern Universal gas range.

THE UNIVERSAL PROGRAM FEATURES EDUCATION OF SALES PERSONNEL

Realizing the importance of proper and adequate education of sales personnel, particularly in CP Gas Range promotion, Universal for 1940 has designed the most comprehensive educational program ever presented the gas range industry. This program comprises Sales Manual, Salesmen's Newspaper, Meeting Notices, and a complete series of Educational Salesmen's Broadsides.

UNIVERSAL *Gas Ranges*

MANUFACTURED BY CRIBBEN AND SEXTON CO. • 700 N. SACRAMENTO BLVD. • CHICAGO, ILL.



IT'S EASY WITH SKINNER-SEAL SADDLE TEE!

● No pipe cutting—no threading. Complete job in 3 minutes! The saving is tremendous. For Electrolux, Bendix Home Laundries—all gas or water appliances. Standard with hundreds of companies. Furnished with either lead or fireproof gasket. *Write for* illustrated bulletin giving prices.

M. B. SKINNER CO. *Est. 1898* **SOUTH BEND, IND.**

The Industrial Gas Engineer and Space Heating

By

Raymond F. Mann

Wentz-Mann Co.
Kenmore, N. Y.

AT FIRST THOUGHT an article on space heating seems out of place in a discussion of the work of an industrial gas engineer. A little study will show, however, that such an engineer must for his own good have a very clear and comprehensive knowledge covering this entire field.

If he works for one of the smaller companies, very often he is the house heating engineer as well as the industrial engineer, and obviously must be informed. If he works for one of the larger companies, it may well be that the house heating and the industrial departments are two entirely separate divisions of the New Business Department, each with its own personnel and apparently little in common. Even here, however, he will frequently find need for this knowledge. In his contacts with plant executives he often has house heating problems thrust upon him.

If he can solve complicated industrial heating problems, then of course it should be simple for him to say why that one room at home doesn't heat, or what it would cost approximately to heat an eight room house 30′ by 35′, or whether an ABC boiler is better than an XYZ, or if a new home should have an air-conditioning furnace or a hot water system. Inability to answer such questions in an authoritative manner means a loss of prestige and a doubt as to the engineer's ability to handle the bigger plant problems. Conversely, help in such personal matters usually means winning a greater respect for his ability and an increased friendliness that proves a material aid towards greater success in plant affairs.

Have an Eye to Opportunity

More important perhaps than even these considerations is the fact that so many opportunities exist within these plants to sell gas for space heating, and the industrial gas engineer is in the best position to see and take advantage of them. After all, it all goes towards building up the total gas consumption of the plant, his primary objective. Especially have these opportunities arisen since the ubiquitous gas unit heater appeared on the scene. Rare is the plant that doesn't have a washroom, a plant office, or a detached building or two that would make ideal installations. Such prospects are constantly cropping up. When they do arise, which is better:—"Space heating is out of my line but I'll bring an engineer here from the House Heating Department that can tell you what you will need," or "Suppose I just measure this up and then we'll sit down and I'll tell you what we have that will just fit your needs."

Therefore, we are devoting this article to space heating, emphasizing the engineering side as applied to the heating of industrial buildings. It is expected that the industrial engineer will study the American Society of Heating & Ventilating Engineers' Guide, the several excellent books on space heating, and the catalogues of the various manufacturers of heating equipment.

Accurate Estimating Essential

Let us suppose now that we are confronted with a request for an estimate covering the installation of gas heating equipment for a large manufacturing building, together with an estimate of the probable operating cost. The first thing to do, as in any heating problem, is to calculate the heat loss. Here a very important admonition is in order:— Throw away any rules-of-thumb, quick methods of determining heat losses, Mills Rule, cubage, etc. Such short cuts may occasionally have a place in residential work where the variation from house to house is small; but for commercial or industrial buildings they are worthless, giving results far from accurate at a time when accuracy is essential.

Rather we must resort to the longer but safer method based on the old rule of heat transfer:—

$$Q = K A \Delta t$$

where Q = the heat loss, and is normally expressed in B.T.U.'s per hour.
K = the coefficient of heat transfer, expressed in B.T.U.'s per square foot per °F temperature differential per hour.
Δt = the differential between indoor and outside temperatures.
A = the area in square feet of wall, window, floor, or ceiling.

For the first factor, the "K" of the above equation, we turn to the Guide of the American Society of Heating & Ventilating Engineers. There we find compiled coefficients for all common materials and most of the ordinary forms of construction. We will find "K" for an 8″ or 12″ brick wall, plain or plastered; for a 6″ or 10″ concrete wall; for frame construction; plank or concrete roofs, and most of the coefficients that we need. Once in a while, however, we encounter an unusual type or combination of types not given in the Guide or other source book; and hence it pays to be able to derive coefficients where necessary. For this purpose we use the following formula:—

$$K = \frac{1}{\frac{1}{f_1} + \frac{1}{f_o} + \frac{1}{a} + \frac{t_1}{k_1} + \frac{t_2}{k_2} + \left[\frac{t_3}{k_3}\right] + \text{etc.}}$$

where f_1 = the film or surface conductance for the inside surface
f_o = the surface conductance for the outside surface.
a = the thermal conductance of any air space.
$t_1, t_2, t_3, \ldots$ = thickness in inches of the various materials, and $k_1, k_2, k_3, \ldots$ = coefficients for the various materials.

Tests at the University of Minne-

sota give average values for f_i of 1.65 and for f_o of 6.00, assuming still air in the interior and a 15 mile per hour wind velocity outdoors, the usual assumptions. Actually, of course, these values vary with the different materials making up the surface in question, but are close enough to these figures for all practical purposes. The value of "a", the conductance of an air space, depends on temperature, width, position, and material on the surfaces. Tables are available giving these values under different conditions but as it is found that an increase in width beyond 1" has but little effect, the usual practice is to take a = 1.10 where the air space is wider than ½" and the mean temperature around 40 °F. The thicknesses t_1, t_2, and t_3 of the various materials involved in this combination wall are found by actual measurement. The coefficients k_1, k_2, and k_3 of the same materials have been determined and can be found in the Guide (a broad statement but probably safe, as every possible building material has been tested and listed). Hence, substitution of the figures so obtained and solution of the equation for finding "K".

The second factor, the "A" of the heat loss equation, is the area of the surface in question and is found by actual measurement in an existing building or by scaling the plans of a proposed building. When it is for a side wall, the area of the windows and doors is subtracted from the total wall area, as the heat loss for those two items is determined separately.

The last factor, Δt, the differential in temperature between the inside and outdoors, sometimes presents problems. The outside temperature is arbitrarily established, and depends on climate. In the Northern states it is generally around zero °F. The inside temperature is a different matter. We are given, of course, the desired working temperature, which means at the breathing line. If, however, the room is 20 or 30 feet high, what is the temperature at the ceiling or roof, and what is the average wall temperature? These are the figures that determine Δt.

Direct Radiation System

This is a question of good judgment. The method of heating has a most important bearing and must be carefully considered. A direct radiation system, which by its nature allows the heated air to follow the laws of physics and rise to the highest point in the room unhindered, means a very great differential between floor and ceiling in high rooms. One rule of thumb is to allow 2% of the temperature difference between indoors and outdoors per foot of height above the breathing line to determine the air temperature at any level. The American Society of Heating & Ventilating Engineers recommends this rule for ceiling heights between 10 and 20 feet, but doubts its accuracy for greater heights. The Hoffman Specialty Company in its handy data book gives the following table:—

Extra Radiation for High Rooms
For Rooms Over 12' in Height Increase the Calculated Radiation by the Following Percentages.

14 feet	4%	35 feet	31%
16	8%	40	34%
18	12%	45	36%
20	16%	50	38%
25	22%	55	39%
30	27%	60	40%

Other Systems

In buildings heated by unit heaters or other types of fan systems which counteract the natural tendency of the warm air to rise but instead force it downwards towards the floor, the differential may be drastically reduced. The A.S.H. & V.E. recommends that not less than 1% per foot of height above the breathing line be taken under any circumstances unless the manufacturer of the heating equipment will guarantee a lower figure for the specific conditions involved. This is where the location and type of heaters, direction and velocities of warm air discharge, building construction, all play a part and where good engineering judgment is essential.

Having set up a figure for the ceiling, the wall temperature would be an average of floor to ceiling figures. Floor temperatures are usually taken as 5° F below those at the breathing line unless of course the space below the floor is heated.

Solving now the $Q = K A \Delta t$ for walls, windows, doors (generally grouped with the windows) and floors, we still have to determine the heat necessary to warm up the air that seeps into the room from outdoors and must be raised to room temperature. Two main methods are in vogue for figuring this loss. Perhaps the more accurate of these is the method that attempts to determine the actual leakage of the windows, doors, and walls in cubic feet of air an hour. Tables are available based on experimentation giving the quantity of air infiltration per square foot of wall area and per foot of crack for various types of windows and at varying wind velocities. With good construction where the walls are plastered, the infiltration through the walls as compared to that through the windows is usually negligible and can be disregarded. Window infiltration, however, is a considerable factor, varying widely with the type of window, how it fits, and the wind velocity. There is leakage both around the frames and around the movable parts of the sash. Caulking reduces the former and weatherstripping the latter. Considerable judgment has to be exercised in selecting the figure to be used from the available tables, as there is such a wide variation. It is customary if the room in question has but one exposure to use all the crack area; with two exposed walls, the wall having the most crack; and with 3 or 4 walls exposed, one-half the total crack.

Residential and Small Rooms Vs. Factory

The other method of estimating air infiltration, the air change method, is much simpler; and in view of the many assumptions that are involved in the first method given above probably is just about as accurate. Here the assumption is made as to how many complete changes of air there will be in an hour. With residential work and small rooms the usual practice is to figure one air change for rooms with one exposure; 1½ changes for two exposed walls; and 2 changes for rooms with 3 or 4 exposures. Again engineering judgment enters. With good construction, tight fitting windows, double sash or weather-stripped, one air change an hour is adequate for most rooms even with more than one exposure. On the other hand factory buildings with rooms of large floor area are generally figured as having but one-half of a change an hour, unless there are ventilating fans or large doors that are frequently left open. In such cases, due allowance must be made for the additional air that they will introduce. In the case of the fans, the actual rating in cubic feet of air exhausted per minute should be found from name-plate or manufacturer's catalogue. In the case of the doors, a generous amount must be added, depending on size of doors and time left open in a day.

Having the air infiltration in cubic feet an hour, it is multiplied by the specific heat for a cubic foot (.018) and the temperature rise involved. Usually this will be found to amount

to one-eighth to one-fifth of the total heat loss, quite a sizable proportion, making it unfortunate that so much has to be assumed in its determination.

Wind Velocity

It might be well at this time to consider another variable that often assumes importance, and that is the effect of high wind velocities. As we noted above, the surface coefficient for the building exterior was based on a 15 mile per hour wind. This is a pretty fair average for most cities for the winter months and serves well as a basis of calculation. If, however, the question arises as to the factor of safety involved, in say a 30 mile wind, we must do some more figuring. High wind velocities increase both convection losses from the surface and infiltration, resulting in a marked increase in total heat loss. The most practical way of allowing for this increase is to consider the change in the wind velocity as equivalent to a drop in outside temperature. Actual tests by the National District Heating Association led to the following table:—

Effect of Wind Velocity on Heat Loss from Buildings
(Assumed Inside Temperature 70° F.)

Outside Temperature, ° F.	Equivalent Drop In Temperature Per Mile Increase of Wind Velocity
50 to 40	0.75
40 to 30	1.0
30 to 20	1.1
20 to 10	1.2
10 to 0	1.3
0 to —10	1.4

Our calculations so far have given us the heat losses through walls, windows, floors, ceilings, and that through air infiltration. If these are added together we get the total heat loss, which is the basis for the selection of heating equipment and the estimating of costs.

Type of Plant

We turn now to a consideration of the type of heating plant to install. Shall it be unit heaters, a steam or hot water boiler, an air conditioning furnace, a pipeless furnace with or without blower, or a circulating heater with or without fan? Naturally the size and type of space to be heated influences our choice. A small office may best be taken care of by a circulating heater. A large office divided into a number of rooms may call for a steam or hot water boiler system. Manufacturing space, particularly if high ceilings are involved, is ideal for unit heaters in most cases. There are many border line places, however, where the engineer has a choice; and it is here that he takes advantage of all the knowledge he has stored up concerning heating equipment. Each has its merits, and local conditions in each particular case should guide his recommendations.

Economic Factors

Suppose we have decided on unit heaters, the question then arises as to the number and location of units. Here the economic factor enters. It is less expensive as regards first cost to use a small number of large units than vice versa. On the other hand, a better control and more uniform distribution of heat is obtainable with the greater number of smaller heaters. The type of occupancy usually decides. With many workmen in the plant, particularly if they are seated or standing in one position, the lower velocities and greater uniformity from the smaller heaters is essential. For other types of occupancy, such as garages, storehouses, foundries, etc., these items are less important; and the larger units may well be used.

Location of Heaters

Regarding location we find several schools of thought exist. One group prefers to place the heaters parallel to and near the outside walls, and chase the warm air around from heater to heater parallel to the walls. Another group places the units near the outside walls with their backs to the windows, throwing the heated air towards the center of the room. The theory here is that the cold air will be drawn through the heater before it can sweep across the room. The last school places the heaters facing the outside walls, but 30 or 40 feet away, and throws the warm air directly at the source of the heat loss. The writer has tried all three, and leans towards the first two for spaces with 3 or 4 exposed walls, and the third where there are but one or two cold walls. Here again the ratio of depth to length, type of occupancy, size of heater, and velocity of air flow govern; and hard and fast rules can not be laid down.

Figuring Costs

The last item (often the first in importance to the consumer) is an estimate of the cost of operation. Finding this calls for a judicious mixture of sound calculation and a background of experience. As a first step the engineer should get together all possible information on heating costs in his territory, classified as to the type of building. He should have data as to what it costs per square foot of radiation to heat residences, offices, stores, churches, garages, warehouses, and all possible types of industrial buildings. Except for the residences each consumer should be listed separately in these data, giving the radiation and any notes available as to the temperatures maintained, hours of occupancy, etc. This list should be used as a check against any calculated costs for a new consumer; and any sizable variation between the estimated figure and an actual cost on a similar installation should be carefully examined. On a house heating estimate an error of 10% might mean but $10, but an error that large on a sizable industrial plant might mean several hundred dollars and a black mark on the record of the engineer that figured it. The estimate should be on the safe side but as close to the line as possible, since an unnecessarily high figure might frighten the prospect away from considering gas heating. It is possible to come remarkably close to the exact cost in almost any case, and every effort should be made to be exact.

The Degree Day

The basis of all estimating of costs is the Degree Day conception, that has proved such a boon to the heating trade. This is too familiar to need explaining here. Each engineer should have a chart giving the degree days for his city for any inside temperature, not just for 70° F, as few industrial plants will operate at as high a figure as 70° F. Then, besides this he must know the operating efficiency of the heating plant he has specified. With vented unit heaters located in the space to be heated, an efficiency of 83% is usually assumed. If the heaters are unvented, a higher figure can be

used, although hardly 100% unless the air infiltration figure has allowed for the extra ventilation that will be found to be necessary. Lastly the hours of occupancy each week and the temperatures during each period, working and non-working, must be known.

Gas Consumption

Given all this data and knowing from your calculations the maximum heat loss, the following equation is used to find gas consumption per season in cubic feet of gas:—

$$Q = \frac{\text{Maximum heat loss in Btu's per hr.} \times \text{Degree Days at working temp.} \times \text{Av. Degree Hrs. at working temp.}}{\text{Btu value of gas} \times \text{Efficiency} \times \text{Room temp. less 5° F (Working temp. —5°)}}$$

$$+ \frac{\text{Maximum heat loss in Btu's per hr.} \times \text{Degree Days at non-working temp.} \times \text{Av. Degree Hrs. at non-working temp.}}{\text{Btu value of gas} \times \text{Efficiency} \times \text{Room temperature —5° F (Non-working temp. —5°)}}$$

The first half of this equation gives the gas consumption during the working hours while the building is at the desired temperature, and the heat loss is that calculated. The second half is the gas consumption during the non-working hours during which the thermostat is maintaining a lower temperature. This entire equation is based on rather empirical assumptions, but gives very close to the actual figures.

To find the degree hours at working temperature one week of seven days is taken as a base. An hour a day is added to the actual working hours to allow for heating up. Then if the total hours per week at working temperature are divided by 7 the result is the average degree hours per day for each zero degree day at the working temperature. This subtracted from 24 gives the average degree hours per day for non-working temperature. Thus if the plant operates 5 days of 8 hours, the average degree hours at working temperature is 5 x 9 divided by 7 or 6.43 and this value would be substituted in the first half of the above equation. By difference the degree hours at non-working temperature would be 17.57.

Solving the equation gives cubic feet of gas per heating season and this can readily be turned into dollars for presentation to the prospect. It is advisable, however, that before this is done you consider the figures carefully, check all calculations for accuracy, and compare with any known figures on similar installations. Sometimes you get a figure that just doesn't seem right, and any such thought is usually a warning. If the plant is now heated by another fuel, check against the consumption of that fuel. Neglect no opportunity to test your figures before submission. Experience is the best of all safeguards, but naturally requires time. Care in selecting every coefficient, making every measurement, and taking every assumption will pay dividends in accurate results.

Space heating is a most interesting and important part of the gas business. The industrial engineer owes it to himself as well as his company to have a comprehensive knowledge of all its phases. It will be knowledge that he frequently will draw upon.

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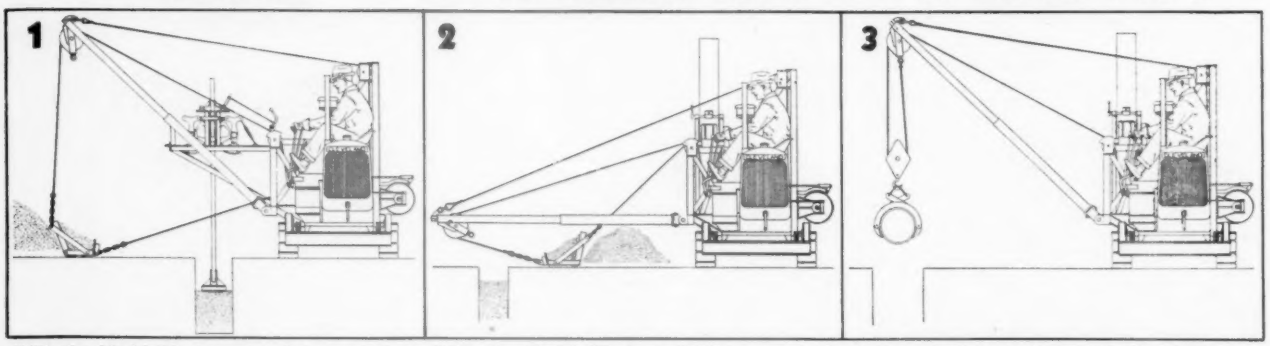

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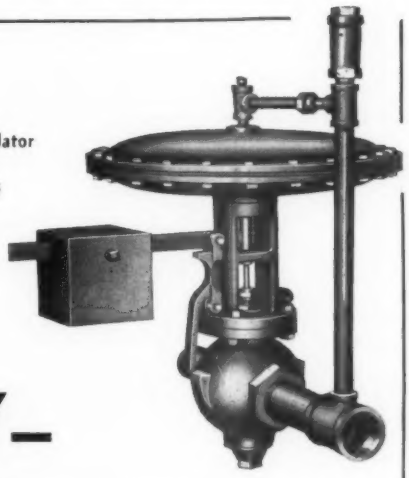

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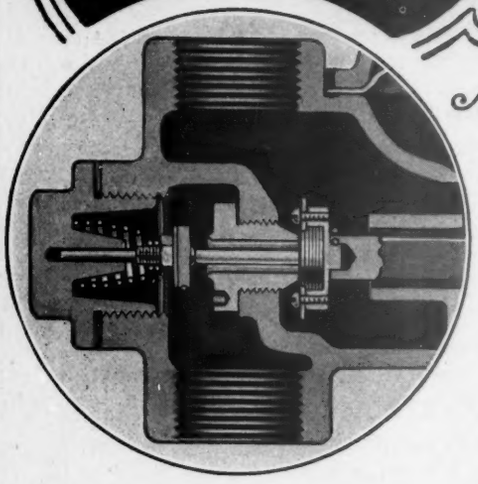

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Plans for Gas Industries' Exhibit at New York World's Fair Announced

GREATER VARIETY and more drama and picturesqueness will characterize the gas industries' displays at the New York World's Fair this year as a result of extensive changes to make the exhibit even more popular than it was in 1939. The exhibit will be called "Gas Wonderland," a name that was chosen to typify the progress made by the industry in creating gas appliances and equipment that have wrought significant changes in home life, in commerce and industry in recent years.

A description of the new 1940 display set-up has been received from Hugh H. Cuthrell, president of Gas Exhibits, Inc., the non-profit body organized at the end of 1937 to sponsor displays at the exposition.

"Though we have retained a few of the outstandinng features of the 1939 exhibit which attracted thousands upon thousands of visitors last year," said Mr. Cuthrell, "we have introduced many new elements of showmanship in staging our displays for this year.

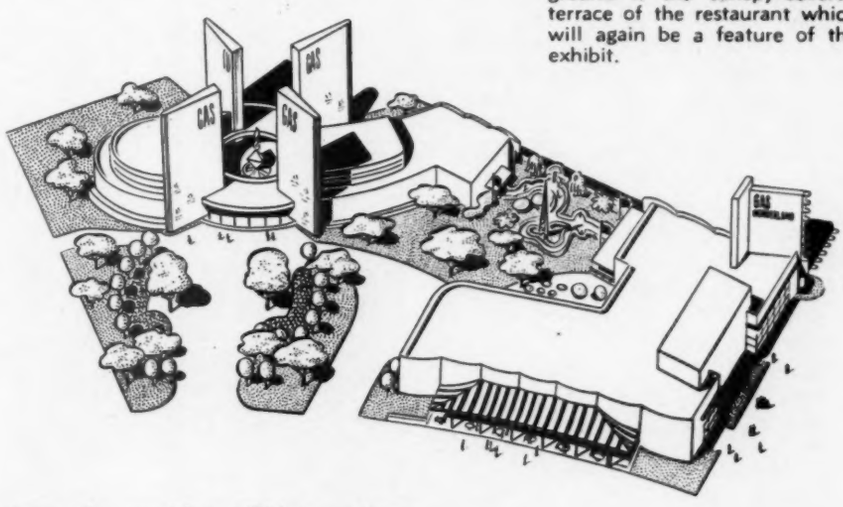
"The two-acre plot on which the exhibit is located will contain surprises and wonders which will delight both young and old, from the moment they enter the pavilion until they have passed through the exhibit. Two of the most unusual attractions for 1940 are the 'Mystery Gardens' with their 'singing' trees, and 'Tiny Town' where the buildings 'talk.'

"Once within the entrance pavilion facing the Fair's famous Avenue of Patriots, the visitor will have his first taste of exhibition magic when he is greeted by the 'Disappearing Dwarf,' a real human being of diminutive proportions who will perform a few comic antics and then suddenly disappear. The visitor will then pass through a short mirrored ramp at the end of which is a fountain. Presto, the dwarf appears and does another trick; he lights a gas flame through a solid column of water in the fountain and then disappears again, only to re-appear at the entrance.

"Visitors will then be routed through the 'Magic Caves of Ice,' a popular feature of the 1939 set-up, which will be retained this year to demonstrate the history of refrigeration through a series of picturesque realistic dioramas, beginning with the cave men up to the present day of modern gas refrigeration.

"The next display groups are designated as a 'mini' basement and a 'mini' kitchen which are so contrived that the visitors get their first view of them through 'peep holes' along the corridor. Thirty persons at a time can get a view of the interiors which appear greatly reduced in size because they are seen through hidden lenses. By passing through the rooms after peeping at them visitors gain a perspective which will heighten their interest in the gas appliances with which the rooms are furnished, these appliances being those which are so familiar to every one in the industry—ranges, refrigerators, water heaters, house-heating and air-conditioning apparatus.

America's gas industries will present at the 1940 New York World's Fair an exhibit to be known as "Gas Wonderland," which will be entirely different from that of last year. At the right, is the entrance pavilion wherein will be the "Magic Caves of Ice" and a series of model kitchens. To the left of the pavilion are the "Mystery Gardens." At the upper left of the exhibit group is the "Court of Flame" building, where "Tiny Town" with mechanically-operated, miniature "talking houses" will be located. At the right in the foreground is the canopy-covered terrace of the restaurant which will again be a feature of the exhibit.



"The so-called 'mini' basement is a model utility and play-room decorated in a manner that would commend itself to the householder whose hobby is fishing. The floor covering is designed to represent a sandy beach with a rippling wave effect at the edges and a large starfish design in the center. Under-water scenes form part of the wall decorations. In the 'mini' kitchen all the various types of appliances that go to make up the ideal 'all-gas-kitchen' will be found: a Servel Electrolux refrigerator, a 'CP' range, a modernistic sink, a breakfast nook, and a specially-designed 'space-saving' kitchen cabinet with an ingeniously devised revolving shelf which the housewife can manipulate in such a way as to bring any desired article in front of her merely by turning the shelf. Among the kitchen decorations will be photo-murals showing fields and gardens.

"When visitors have explored the 'mini' basement and the 'mini' kitchen, they will pass onto a porch facing the 'Mystery Gardens' in which a variety of entertainment will be offered to enliven the trip through the exhibit. Here they will find many surprises as they walk through the gardens as the first flagstone on which one steps may cry out: 'Don't step on me.' Trees will 'sing' and so

will a bench under an umbrella tree when sat upon. Other oddities of this sort will include a cactus plant that has flowers of flame—a gas flame of course; statues that will drop out of sight in an instant while the visitor stands bewildered, and little gnome-like figures that spring out of the hedges, leering and speaking to the wondering beholder.

"Another spectacular display, occupying nearly a third of the exhibit space, is 'Tiny Town,' a typical American suburb in miniature, with its church, motion picture theatre, school, swimming pool, newspaper plant, factory, hospital, gas company office, and a number of shops, stores, and houses that range from the modest dwellings of those with low incomes to the small mansions of the well-to-do. On the outskirts of the village there will be a small farm.

"A feature of 'Tiny Town' is the apparatus which causes 21 of the buildings in the village to 'talk,' the voices to be heard simultaneously with an opening-up of the buildings—either by the roof's being automatically removed, or the front or sides falling down in such a manner that the interiors will be displayed.

"As may be imagined, the interiors of the buildings in 'Tiny Town' will reveal all the various types of gas appliances and gas equipment used in the home, in commerce, and in industry.

"Some of the social and economic aspects of the use of gas to be shown by the exhibit include: the manner in which a newspaper plant can speed up its processes by drying ink quickly; the increase of all-year-round employment in a candy factory; the provision of unlimited quantities of clean linen in hospitals; tempering the cold water in swimming pools; cooling of beverages and preservation of foodstuffs through refrigeration, and protection of garments in dress-making establishments. The use of gas for decorative illumination will also be shown.

"Located in the 'Mystery Gardens' are two other striking exhibits—one a realistic diorama featuring the Marquis de Lafayette, famous as a general during the American Revolution, and the other a map showing the extensiveness of the natural gas areas in the United States.

"The Lafayette diorama shows the celebrated Frenchman standing in the drawing room of a mansion at Fredonia, New York, which town is noted in the annals of the gas industry for its early use of gas for lighting purposes. General Lafayette is seen standing in wonderment as he looks through a window at another mansion across the way which is illuminated with gas in honor of his presence in the town. The event depicted occurred during the visit made by Lafayette to the United States in 1825.

"The natural gas map is laid horizontally in the gardens. It is constructed of terrazzo marble, with the individual states represented by different colors, and will show the natural gas distribution system throughout the nation. A high spot of the display will be a model of a gas well in Texas. Nearby, visitors will see an operating model of a derrick used in natural gas districts.

"Another new feature of the 1940 set-up is a deep kaleidoscopic pool with a glass bottom in which multi-colored fish without heads and tails, fish with many heads and tails, plants that change color and shape, fantastic forms and combinations of design will be seen in the pool below and reflected in huge mirrors overhead, the reflectors being those that form the lower sides of the gigantic mirrored cube resting on one of its corners that was an object of curiosity and interest last year.

"As was the case last year, a large and comfortable restaurant will occupy part of the exhibit space, all of the food to be prepared with the aid of gas for cooking and refrigeration. Patrons may eat indoors, on a tree-shaded patio or on a canopied terrace.

"The four conspicuous 90-foot pylons within what was called last year the 'Court of Flame,' will be retained. These pylons are colored yellow, but at night they will be swathed in gas light. The gas flame torch from the upper corner of the giant mirrored cube will still be a feature of its night-time lighting, the entire group of buildings being illuminated at night by high-powered gas floodlights. A huge fin-like superstructure above the entrance pavilion bearing the words 'Gas Wonderland' will guide visitors to the exhibit."

The facilities of the popular "Court of Flame" Club, which was a feature of last year's exhibit group, will again be available to those connected with the gas industries.

"Gas Wonderland" is the idea of Richard Pond, director of displays of the well-known advertising firm, Batten, Barton, Durstine & Osborn. Skidmore & Owings, John Moss Associate are the architects and the firm of Burdette Baxter Gilmore are the design engineers.

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When Delay to Commence Service Results in Liability

By
Leo T. Parker
Attorney at Law
Cincinnati, Ohio

IN THESE PAGES we have dealt with the liability of municipalities, and gas corporations, for illegally cutting off gas service. However, as yet, we have not discussed the circumstances under which a municipality, or gas corporation, may be held liable in damages for an illegal delay in commencing service. The law presumes that acceptance from a prospective consumer of an application for service indicates consent on the part of the municipality, or gas corporation, to supply gas and incidental service within a reasonable period. So, therefore, in many cases involving this subject of law the important consideration of the court is: Under the particular circumstances of this controversy what is a reasonable period?

General Rule

Various modern courts have consistently held that it is the duty of the holder of a public franchise to serve impartially all the members of the public who apply for and have made the necessary arrangements to receive service. Of course, under this modern rule of law it is presumed that the one who applied for service offered to pay the price and abide by the reasonable rules and regulations of the municipality or company requested to supply service. Obviously, serving all consumers "impartially" means that none will be favored at the expense of others except that certain classes or type consumers may receive special rates or services. However, this arrangement is not a favor to a few consumers because any and all persons or firms willing to comply with the special rules and regulations may receive the benefit of the lower rates, or unusual service.

Irrespective of the classification of service, the higher courts hold that acceptance by a city or a public service corporation of an application for a service, and compliance on the part of the consumer with the reasonable rules and regulations, creates an implied contract under which the city or the corporation by implication agrees to furnish a sufficient supply of gas for the ordinary uses of the consumer. So far as the consumption of gas is concerned, it is immaterial to the consumer whether the supply be furnished by the municipality or by a public service corporation. As a general rule, the obligations to the consumer will be the same in either case.

What Is Fatal Delay?

As above explained, either a municipality or a gas corporation may be liable in damages for delaying an unreasonable period in commencing service after the application is filed by the prospective consumer.

For illustration, in a leading case, Columbus v. New York, 917; N. Y. 1st Div., P.U.R. 1918 A 109, it was held that a delay of seven weeks was unreasonable before furnishing service upon an application for conjunctional service. In this case it appeared that the application for service had been previously accepted by the utility to owner of the same premises.

Another important point of law is that if either a municipality or a gas company accepts an application for service, it impliedly agrees to supply gas within a reasonable period notwithstanding it is impractical to do so.

For example, in Merryman v. Baltimore City, 138 Atl. 324, it was disclosed that the owner of a lot had nearly completed a dwelling thereon when he applied for service and deposited with the city the required amount, and he complied with all other rules and regulations. However, the city delayed for two years in commencing the service. The property owner sued the city for damages equal to the loss of rental income from the property during the period he waited for service. The Counsel for the city argued that it was not liable because when the application for service was accepted no main line was in close proximity to the dwelling and service could not be commenced until the main line was laid. However, it is important to know that the higher court indicated that the city would be liable for unusual delay in commencing service, after accepting the application, although it was impractical to promptly supply the service. This court said:

"The acceptance of this application, we think, created an implied contract under which the city, by implication, agreed not only to supply him such to the reasonable rules and regulations of the appellee, but also to supply the service within a reasonable time thereafter."

Consumer Negligent

Of course, the testimony must show that after applying for gas service the consumer acted in good faith and used ordinary care to protect himself against injury, illness or other damage, otherwise he is not entitled to a favorable verdict.

For instance, in the recent case of Fort Smith Gas Co. v. Cloud, 75 Fed. (2nd) 413, it was disclosed that a gas consumer named Cloud sued a gas company to recover damages for personal injury alleged to have suffered on account of the negligent delay of the gas company in installing a gas meter with proper connections at a house about to be occupied by himself and his family.

During the trial, testimony was given which proved that Cloud called at the office of the gas company on the evening of the 7th for the purpose of ascertaining how early the gas could be turned on in the house to which he was moving, and was advised that it could be turned on immediately after work hours "after your deposit is made." On the morning of the 8th, Cloud went to the office of the gas company to see if his meter deposit had been transferred. Finding that it had not been so transferred he boarded a street car and went to the office of the company and made the required meter deposit.

Cloud's wife and family arrived between 11 and 12 o'clock, and he then went to the telephone and called the office of the gas company. However, the mechanic did not come with the meter until about 4 o'clock p.m. and then made the necessary con-

nections and installation. The wife and children of Cloud went to a neighboring house about 150 feet distance from the house in question, where they were comfortable, but Cloud remained in and about the unheated house until the mechanic arrived. It was zero weather. Following the installation of the meter Cloud had a chill. He was taken sick with pneumonia and confined to his bed for six weeks.

The important evidence introduced by Cloud to establish negligence of the gas company was that while the meter was ordered installed some time between 9 and 10 o'clock a.m. on the 8th of February, the temperature being around zero, it was not installed until 4 p.m. on that date.

The legal question presented the court was: Was the delay unreasonable and had Cloud used ordinary care to protect himself against injury and illness while waiting for the gas company to connect the gas?

If the answer to this question is affirmative the gas company is liable in full damages to Cloud, otherwise the gas company is not liable.

It is important to know that the higher court held the gas company not liable and said:

"Even if it could be said that there was unreasonable delay in installing this meter, such delay was not the proximate cause of Cloud's injury, and to institute actionable negligence the injury must have been the natural and probable consequence of the alleged negligent act. The consequence of the negligent act must be within the range of probability as viewed by the ordinary man, and consequences which are merely possible cannot be regarded as either probable or natural . . . The gas company could not reasonably have anticipated that Cloud, a man of mature years, would remain exposed, idle, and inactive in this unheated house in zero weather for some 7 hours. As has already been observed, it was wholly unnecessary that he do so. No one is required to guard against that which a reasonably prudent person, under the circumstances, would not anticipate as likely to happen."

After making this explanation, the higher court continued by stating that although a gas company is negligent in failing to connect gas service within a reasonable time after the application is filed, yet if the consumer fails to use reasonable care to protect himself he cannot expect to recover damages from the gas company. This court further said:

"The proximate cause of Cloud's injury, so far as they arose from his exposure in this unheated house, was the voluntary and entirely unnecessary act of the plaintiff, an intelligent and responsible human being, and not the act of defendant in delaying in installing the meter."

Negligence of Gas Company Presumed

On the other hand, it is important to know that certain higher courts have held that any act of negligence will be regarded as the cause of an injury which results, unless the consequences were so unnatural and unusual that they could not have been foreseen and prevented by the highest practicable care. Moreover, the general rule is that the party who commits a wrongful act is liable for all the direct injury resulting from such act, although such resulting injury could not have been contemplated as a probable result of the act done.

For illustration, in the leading case of Coy v. Indianapolis Gas Co., 46 N. E. 17, it was shown that in December a gas company entered into a written contract with a consumer to furnish his residence with gas at an agreed price, and on the terms and conditions stated in the contract, in sufficient quantity for fuel to heat the residence. However, the gas company failed to supply gas and the consumer's wife died as a direct result of insufficient heat. This court said:

"All damage directly traceable to the wrong done, and arising without an intervening agency, and without fault of the injured person himself, are recoverable, the wrong in such cases is said to be the proximate cause of the injury . . . He who is responsible for a negligent act must answer for all the injurious results which flow therefrom, by ordinary natural sequence, without the interposition of any other negligent act or overpowering force."

Exceptions to Rule

It is true, as a general rule, that no one is compelled to do business with any but those with whom he chooses. There are, however, well-recognized exceptions to this rule. It has always been held that telegram, telephone, water, gas, and other like companies that have received from public authorities franchises, which provide for the accommodations of the general public, owe a duty to serve all persons who make proper application for such service, and who comply with such reasonable compensation as may be required.

In view of this law the modern courts hold that persons or corporations enjoying special franchises owe a duty to public, as well as to all individuals of that public who make demands for the beneficial use of the privileges and advantages due to the public.

For example, in Portland Natural Gas & Oil Co. v. State, 34 N.E. 818, it was said "that a gas company, occupying the streets of a town or city with its mains, owes it as a duty to furnish those who own or occupy the house abutting on such street—where such owners or occupiers make the necessary arrangements to receive it, and comply with the reasonable regulations of the said company—such gas as they may require, and that where it refuses or neglects to perform such a duty, it may be compelled to do so by writ of mandamus."

So it was said in Williams v. Gas Co. 52 Mich. 499, that:

"When the defendant company made the connection of its service pipes and mains with the pipe and fixtures of the house, it imposed upon itself the duty to supply the house and premises, upon reasonable terms and conditions, with such amount of gas as the owner or proprietor might require for its use, and pay for, so long as the company should exist and do business."

Therefore, the law is well settled that gas companies, being engaged in business of public character, are charged with the performance of public duties. Accordingly, a gas company is bound to supply gas to premises with which its pipes are connected. It may, however, impose reasonable conditions.

And, therefore, municipalities and gas companies cannot refuse to supply gas service, which it is authorized by its charter to furnish, because of some collateral matter not related to that service. See following cases: Seaton, 49 Colo. 122; Clinton, 196 Ill. 626; Butte, 43 Mont. 118; and Public, 141 N. Y. S. 1018.

See also, Vand, 126 Mo. App. 600, in which a higher court held that a gas company cannot refuse to furnish gas to a married woman who has rented premises in her own name and on her own responsibility, on the grounds that she is a married woman.

And, again Butle, 115 Pac. 44, it was shown that a company which was authorized by its franchise to furnish electricity to the general public had also been supplying gas for fuel purposes. The company refused to furnish electricity to one of its patrons any longer unless he would agree to pay for gas which it was alleged he had stolen from the company. It was held that the company had no right to impose a condition, the purpose of which was to use its franchise to protect its private gas business. Therefore, this court held that the gas company could not refuse to furnish electricity until the gas was paid for.

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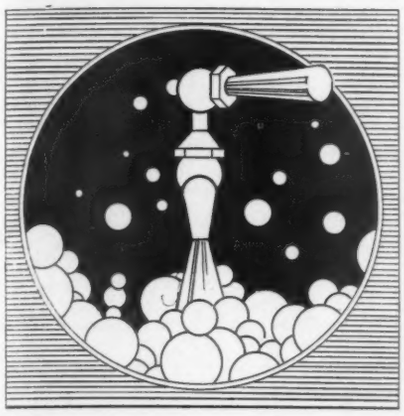

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Bending Pipe

By

W. F. Schaphorst

Newark, N. J.

A question that is often asked is: "What is the best way to bend pipe?"

To bend large pipes, fill with dry sand and plug the ends. Heat to a red heat in the localities to be bent and then bend. Be sure that the sand is dry. Where bends are slight, it is often unnecessary to use sand or resin. The object of the sand or resin is simply to keep the sides of the pipe from collapsing, or to prevent reduction of flow area. If wet sand is used, and if the ends are plugged, the pipe may burst when heated, due to the steam pressure generated.

Instead of sand, resin is good. There is, however, a "right way" and possibly several wrong ways to use resin. An example of a wrong way was recently brought to my attention where the mechanic filled the pipe with resin, plugged the ends, and heated the pipe at the place where he wanted to bend it. He watched for a "red heat" just as he would had he filled the pipe with sand. The result was—a violent explosion.

To use resin correctly, pour it into the pipe and allow it to cool and harden. As soon as the resin is hard, bend the pipe cold. Don't heat it. Then after the pipe is bent, heat the pipe all over sufficiently to melt and remove the resin.

Equal results may be secured by using lead instead of resin. I have been told that on cold days in the Far North they sometimes fill the pipe with water and let it freeze, and then bend the pipe. It sounds plausible, but care must be exercised there on account of the expansion of water when it freezes.

Many excellent mechanical devices are on the market for bending pipe. To bend large, stiff pipe slightly, and inexpensively, there is nothing handier or more efficient, in my judgment than a hydraulic pipe bender driven by a hand pump.

The accompanying chart will be found useful for determining the average radius of bend that should be given to common forms of pipe bends, numbers 1, 2, 3, and 4, as shown at the right, column E.

Also, knowing the radius of bend, the size of pipe, and the form of bend, column D gives the expansion allowance of that bend.

For example a 5 in. pipe was bent to a radius of 40 inches, the bend being a common U-bend as shown by No. 2 in column E. What expansion may be allowed?

The dotted line drawn across the chart shows how the chart is used. Run a straight line through the 5 column A and the 40 column B and locate the intersection with column C. Then from that point of intersection run over to the mark in column E opposite the Figure 2 and the intersection through column D gives the answer as 1.5 in. expansion allowance.

If the size of the pipe were the same, 5 inches, the average radius 40 inches and the bend were a "No. 4" bend, the expansion allowance would be 3.7 inches. If the bend were a "No. 1" bend the expansion allowance would be 0.75 in.

Similarly if the expansion allowance is already known, if the form of bend is known, and if the size of pipe is known, the average radius to which the bend should be made may be determined. In other words, knowing any three of the four factors given in columns A, B, D and E the fourth or unknown factor is easily determined by following the method as explained above.

The chart is based upon the following rules:

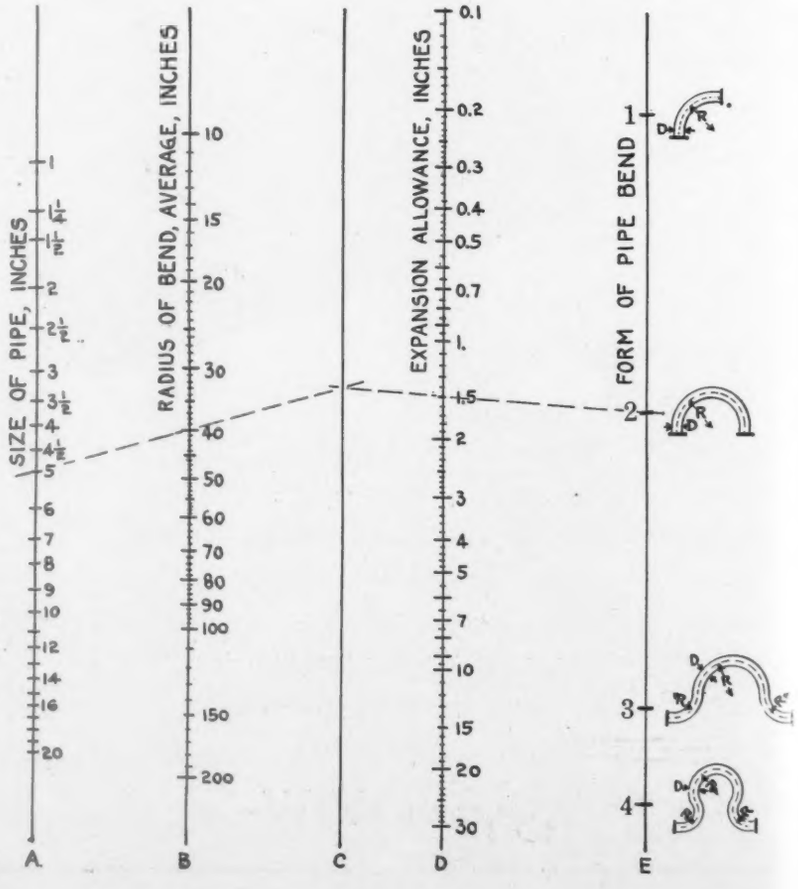
For Bend No. 1—Square the average radius of bend in inches and multiply by 0.0026 and then divide by the outside diameter of the pipe in inches.

Bend No. 2—Same as No. 1 but use 0.0052

Bend No. 3—Same as No. 1 but use 0.0104

Bend No. 4—Same as No. 1 but use 0.013

In the chart all of these operations are already performed—the radii are squared, exact outside pipe diameters are employed, and the proper factors are used.



The Selling Parade

A Digest of Successful Selling Ideas

By
Charles B. Roth

A MAN I HAD KNOWN for many years died the other day; just an obscure salesman in the ranks. He had been only moderately successful in selling. But when I look back on his life I am inclined to think he is the most successful man I ever knew.

Since I have just said that he was only moderately successful, you might think that I am contradicting myself when I call him the most successful man I ever knew. Let me explain. In terms of sales records, he was not the best salesman in the world: but in terms of getting the most out of his life work, I am sure he was.

It was the way he looked at his job that made him so successful.

Just a week before he died, as I sat on the edge of his bed, I heard him talk for the last time about his favorite theme— the satisfactions of a salesman's life.

"Any salesman is a failure," he told me, "as long as he looks on his job as merely that of selling so much merchandise at such and such a price. A salesman has a much higher destiny. He's a teacher. That is what a salesman is—a teacher. And there is no profession of higher honor than teaching. You know that."

"Yes."

"All his life a salesman is teaching somebody something that is good for him to know. He is the greatest distributor of useful knowledge in the world, a salesman is. He starts teaching when he teaches his prospects what his product is. Then he teaches them what it will do—how it will make their work lighter, or give them more pleasure, or satisfaction out of life.

"I tell you, the world would still be in the dark ages, if it were not for the teaching of salesmen. It makes me proud to think that I spent my adult life in so useful a calling."

On my way home from that bedside interview I thought of the results of the teachings of those salesmen—of the acceptance of aluminum, of the washing machine, of the radio, of the automobile, of the countless inventions which would today be dead issues if it were not for the teaching of salesmen.

In place of calling them teachers, I would almost be willing to call them crusaders. I am sorry I didn't think of that before my friend passed away. He would have liked it. It would have given him something new to think and talk about.

Nervous Energy

GRAND OLD DAN MCLEOD, in his day the national champion all-around athlete, a man who could wrestle, run, jump, throw weights, pole vault, walk, put the shot better than any other man of his time, gave me the secret of his success, tipped me off to one of the important things in salesmanship.

We sat talking.

"I've always been a little fellow," said he. "You can see that."

He is fairly short—5-7. But he had a 47-inch chest, and I do not think any man with that sort of chest is "little." But I didn't contradict him.

"I always competed against men much larger. I never weighed over 165, you know," he went on.

"Yes, I know. But how did you get by with the handicap?"

"Easily enough. The secret of success in any walk of life is not size, not muscle, not even brains."

"What is it?"

"Nervous energy."

I saw his point. The entire difference between man and animal, I recollected Goethe once wrote, is the matter of nervous energy. He said that it was this energy which made a man a man.

I think that it is also the secret of the success of every salesman—nervous energy. If a salesman has it, he will sell; if he hasn't it, he had better get it.

What is nervous energy; how do we acquire it; how do we preserve it; how, if it's lost, do we regain it?

There are only two sources of nervous energy. One of these is the food we eat, not any particular food, but all wholesome food which we take into our bodies. The second is the rest we take.

A salesman is really a business athlete. He has to have physical energy to keep on making calls, and mental energy that he may think quick in emergencies. He must have nervous energy, because nervous energy is the mainspring that makes both physical and mental energy alive. Besides, nervous energy is the thing that gives him the radiance of personality.

It follows, therefore, that a salesman must have the same kind of condition as an athlete. To gain it he must take care of himself, get the right amount of food, the right amount of exercise, the right amount of recreation. Then he will have what Dan McLeod told me is "the secret of living a successful life—nervous energy."

Never Forget

"SELLING IS A VERY SIMPLE thing," the manager for a Detroit manufacturer told me one night at a banquet he had called for his regional sales managers.

He added: "But a lot of us make hard work of it."

"I certainly agree with you," I said.

"Good selling," he went on, encouraged by my approbation, no doubt, "has only two parts."

"They are what?"

"First, never forget a customer. The second is a counterpart to the first: never let a customer forget you. Think it over. The whole science and art and genius of salesmanship are involved in those two sentences."

Effort 100%

OF ALL THE GREAT PUBLIC characters I have ever seen I do not think any one of them can match Jack Dempsey for color and all around competitive spirit. He had something.

A few weeks ago the old master gave his conception of the job every competitor has to do—at the same time he told a story which every salesman would do well to learn.

Talking to Grantland Rice, the famed sporting writer, Dempsey gave his rule for competitive success. Rice asked him what it took to make a champion. Dempsey replied with spirit, saying:

"Don't beat yourself. Go in and do your stuff up to 100 per cent."

I like that—the spirit of "doing your stuff up to 100 per cent." It's a motto I'd like to see every salesman keep up in front of himself every day as he works. Not many do. Salesmen come in to see me every day or so who have beaten themselves before they took the step across the threshold of my office—and as for doing their stuff up to 100%, many of them don't do it up to 30%.

"DON'T BEAT YOURSELF. GO IN AND DO YOUR STUFF UP TO 100 PER CENT"—there's as fine a rule for making a success in selling as any rule I have ever seen.

It's the rule of a champion!

Reputation

WHAT ABOUT THE SALES you lose and never know why? They are numerous. And how baffling and discouraging!

Typical case: You are talking with a customer—or maybe we should call him a prospect—and are doing your best. Prospect seems compliant. Prospect seems almost sold. Then when the time comes to close, you do not get the business. You wonder why. Maybe you worry about it. You should.

I know a fine salesman who believes that most of these lost sales can be traced back farther than the opening at the sales interview. At some time, either then or long before, he believes, the salesman did or said something that created the wrong impression. And it was this impression which acted against him in blasting the sale.

"To me this is reason enough for a salesman's always trying to create the proper reputation for himself," he told me recently. "Now, creating a reputation is a continuous process. It consists of what you do, what you say, with whom you are seen, where you are seen.

Speak Their Language

IF YOU EVER WANT to make the most of your chances as a salesman, you have to blend your personality, your background, your past training and experience in with your prospect's life.

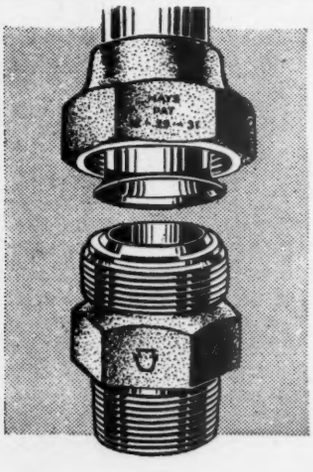
In other words, the secret of salesmanship is to adjust yourself to your customers.

Selling is an adjustment process.

Many salesmen believe they can high hat customers and sell them. They can't. Often a highly-educated salesman has to assume the role of an illiterate when he is talking to illiterate prospects. Often he has to dress the part they want to see him in. Often he has to speak their language.

One of the best selling stories of the late William Wrigley, Jr., concerns his sale of soap to French-Canadian prospects during his early days. Mr. Wrigley was always a top-notch salesman: he understood the necessity for adjustment.

When he called upon those French-Canadian prospects he termed his soap *savon mineral* (mineral soap). Those were the only French words he knew, but he used them to compliment his customers. They bought from him because he showed consideration for their viewpoints and language.



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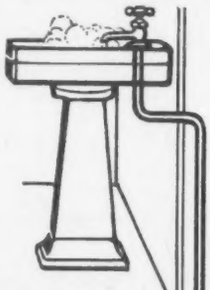

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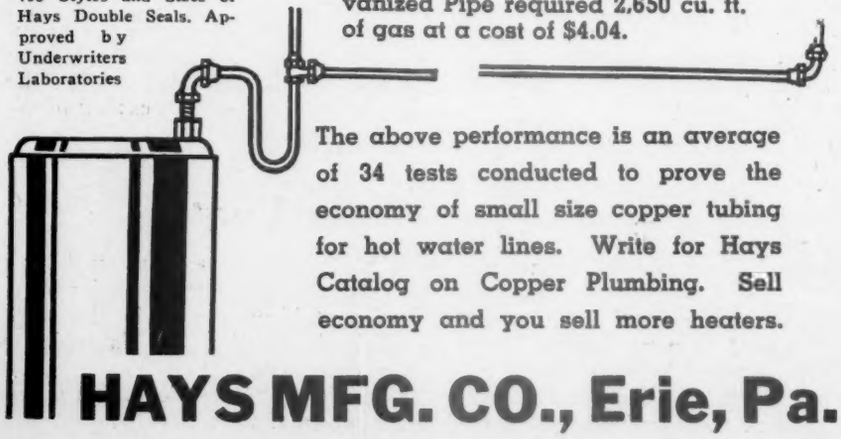

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Gas Popular in Oconomowoc, Wisconsin

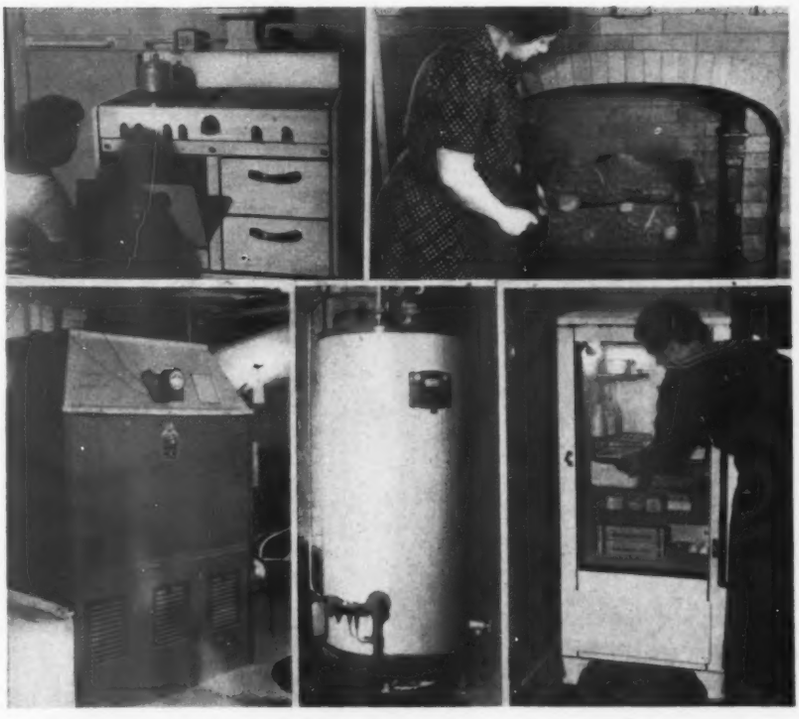
What can be done in selling an entire community on the extensive use of gas for many purposes, is offered by Oconomowoc, Wis., a picturesque city of 5,000, forty miles west of Milwaukee.

The Wisconsin Gas & Electric Co. has a fine sales office here in charge of Walter Wellman, and the staff is always alert to sell customers a broader use of gas.

Appliance dealers in this city are also very active as demonstrated by the successful displays and selling campaign of the Service Appliance Company. Intensive selling by all gas appliance dealers helps to make many sales.

There are about 1000 homes in this semi-industrial, agricultural city, and the gas company's records show that 831 accounts are using gas.

Not only that, but there are seven gas furnaces in operation in this little city. One home has a gas furnace, a gas water heater, gas incinerator, gas stove, and gas refrigerator.



The Finney home in this city not only uses "gas for the four big jobs," but also has a gas incinerator. The illustrations also show the central heating plant, automatic gas water heater, modern gas range and gas refrigerator. There are also many gas logs used in Oconomowoc fireplaces even where central heating plants are installed, to take care of emergency heating of rooms during the spring and fall seasons.

Many women who visit this home, and who see to what efficient use gas is put, decide to buy one or two or more gas operated items for their own homes.

In addition, there are a number of gas log fireplaces throughout the city, and gas appliance dealers are constantly pushing the sale of gas ranges, water heaters and other gas operated appliances. The net result is that gas consumption in Oconomowoc is at a high level.

The Carnation Milk Company located here is an exceptionally large user of gas for industrial purposes as are several canning factories.

New Film on "CP" Gas Ranges

A striking new sound film in technicolor entitled "The Parade to Profits" is now available to key gas utility sales outlets, according to an announcement by Lloyd C. Ginn, from the headquarters of the Association of Gas Appliance and Equipment Manufacturers in New York City. The release of the film is part of the big promotional program sponsored by the "CP" gas range manufacturers outlined in the "CP" Spring-Summer portfolio mailed to approximately 20,000 dealer and utility outlets in February.

"The film emphasizes the large national advertising campaign of the American Gas Association now in progress which is aimed at tapping the big replacement market of more than 8,000,000 prospects who are badly in need of modern gas equipment for cooking," the announcement states.

It is explained that the film is not for sale. It can be obtained gratis at the one hundred clearing points named in the Spring-Summer portfolio. Additional information regarding the film and its distribution can be had by addressing the A. G. A. E. M. at its office in New York.

Automatic Water Heaters. Illustrated price catalog No. 40 of Hotstream Heater Co., 8007 Grand Ave., Cleveland, gives 36 pages of complete details of their entire line of heaters and accessories. It includes also their wall insert room heaters and roughing in charts. A series of tables to aid in the selection of the proper size heater are given and information on water heating costs. Included is information on liquified petroleum gases.

Gas Company Progress

(Continued from page 12)

Sales Expense increased $27,369.00 or 108% and Revenues increased $71,510.00 or 240%. Thus for each *additional* dollar of heating revenue secured the expense increased only 38 cents. Or for each dollar of added expense the companies secured slightly over One Dollar ($1.00) of Annual Net Revenue. Certainly a gas company is fully justified in a sales expansion program when it can obtain a dollar of Net Revenue per dollar of extra New Business Expense. Have we been too lax in expanding sales efforts when the extra effort produces such satisfactory results?

Progress in Selling Kitchen Heating

In order to extend the benefits of gas for Kitchen Heating new low Kitchen Heating rates were also made available. These rates were designed to give Kitchen Heating gas at a rate of 50 cents per M.C.F. after the normal domestic load. This is accomplished by having a variable fixed charge depending on the appliances in use. However, due to securing customers who formerly made little use of gas an analysis shows the companies are averaging 60 cents to 65 cents per M.C.F. for the *additional gas* sold on these Kitchen Heating rates, or 10 cents to 15 cents per M.C.F. higher than was expected.

These Kitchen Heating rates are actually competitive with oil on a fuel cost basis. As a matter of fact, a number of customers have stated they are saving money over other fuels. Think what an opportunity for service to our customers with probably 70% to 80% of them depending on their ranges for Kitchen Heating and mostly using an inferior competitive fuel that costs as much, if not more, than gas. Gas for Kitchen Heating will be used in ever increasing amounts when our customers realize how little it costs them to heat their kitchens with gas and learn of the benefits they can derive.

As Kitchen Heating is somewhat of a new development there is no yardstick available for use in establishing *quotas* or a *proper sales force* to sell a given amount of Kitchen Heating load. These companies assigned the development of Kitchen Heating to salesmen selling ranges which is apparently a logical tie-up. In 1937 these companies sold 79 Kitchen Heating jobs and since filing the new rates in May, 1938,—1966 Kitchen Heating jobs have been sold and January and February are running two to three times ahead of the same period in 1939. Kitchen Heating *ranges* represented 40% of the total Kitchen Heating jobs sold, indicating customers like the idea of gas Kitchen Heating well enough to spend $130 to $175 for proper heating and cooking equipment. We believe this type of load along with House Heating offers one of our greatest opportunities to make friends and add revenue among the low income group as well as the other groups. Here is a market peculiar to New England and one we can secure in large volumes *if we go after it.*

Sales of Other Appliances Not Being Neglected

In extending the benefits of gas and as a possible means of increasing Revenues the sale of the gas refrigerator or water heater or the gas range must not be overlooked. In order to carry these forward along with Kitchen Heating this group of companies substantially increased their Domestic sales force. Thus, whereas they employed 36 salesmen equal to 1875 Salesman Weeks in 1938, in 1939 they used 67.9 salesmen (3530 Salesman Weeks) or 88% greater.

Were Increased Results in Proportion to Increased Manpower?

These companies increased their *Salesmanpower* selling Heating and all domestic appliances 91% over that employed in 1938 and secured 96.5% increase in E.A.R. (Estimated Annual Revenue from Appliance Sales). In other words, increased results were in proportion to increased manpower. However, in spite of this improvement there were not as many customers converted to the use of gas for water heating, refrigeration and kitchen heating as there should have been.

Additional and more effective sales presentation efforts is the answer.

Appliance Sales Comparison with All Industry and New England Companies

The Domestic unit appliance sales increase for this group of companies over 1938 and the sales per 100 Domestic meters compared with 70% of Gas companies in New England and the entire Gas Industry are as given in tables below.

These figures of sales per 100 Domestic customers show that the group of companies mentioned in this paper have not done as well as the other New England companies on ranges and water heaters. This is not because they do not believe in pushing ranges and water heaters but because they thought this first year should be concentrated on Kitchen Heating and House Heating. 1940 should show an improvement in range and water heater sales.

Now What of the Expense? Inventories

In order to keep the sales expense in line a number of changes in policy were made. First, the Sales Department was cautioned on keeping inventories down—and in order to insure this being done they set up definite quantities of each appliance for each month that would be allowed for displays plus stocks. The number of models of each appliance as well as the number of manufacturers' lines that could be sold were limited. That these policies were productive is evident by the fact that the average inventory at cost was $109,000 in 1937, $70,000 in 1938 and only $53,000 in 1939. The appliance turnover increased from three in 1937 to 6.5 in 1939.

1939 Vs. 1938

	* New England Gas Companies (Except N.E.G. & E.A.)	N.E.G. & E.A.	Gas Industry
Ranges	.03%	22.1%	29.5%
Automatic Water Heaters	.9%	27.7%	29.1%
Refrigerators	9.0%	38.5%	28.0%
Kitchen Heaters	9.5%	34.0%	
Space Heating	20.0%	223.0%	47.4%

Appliance Sales per 100 Meters in 1939:

	Ranges	A.W.H.	Refrig.	K.H.	S.H.
New England Companies Ex. N.E.G. & E.A.	2.36	1.0	1.18	.28	.13
New England G & E. A.	1.74	0.7	1.18	.91	.70
Ratio N.E.G. & E.A. to Total N.E.G.A. except N.E.G. & E.A.	26%	30%	...	225%	438%

** This represents 70% of Domestic meters in New England states.*

Compensation Plans

A new compensation plan was developed that was considered sounder than the one previously used. Namely, it was designed to penalize the poor producer but to reward the good salesman. The plan also was designed so that in no event would a salesman receive more than the appliance profit on the sales he makes, plus the first year's net revenue from the gas sold through the appliances. Furthermore, arrangements were made so that if a salesman did not produce in reasonable time he was placed on what amounted to a commission arrangement or if he did not appear promising he was let out. Carrying a non-productive salesman costs double—that which he is paid *plus* the *lost sales* a good salesman would bring in. Employees and stockholders are entitled to a sales force filled with producers since the Sales Department is the life blood of our business. The compensation plan employed will give the average or better than average salesman from 20% to 30% higher compensation for the same volume of business as that of compensation plans studied in New Jersey and a number of companies in New York State. However, for the less than average salesman the pay is the same or for the very poor salesman less than for these other companies.

Markups

Markups were also studied and where possible increases were made. Naturally what can be done to improve the markup depends on what these have been in the past and what the competition is doing. The following will give some idea of the increases made in 1939 in various appliance selling prices:

	Company A	Company B	Company C
Ranges—Increase per appliance	$2.50	$4.50	$4.50
Refrigerators—Increase per appliance	3.50	3.50	12.00
Kitchen Heater Burners	4.50	4.50	4.50
Worcester Water Heater	3.25	3.25	3.25
Conversion Water Heater	...	5.00	...

These adjustments were estimated to have saved $18,000 on 1939 sales volume.

In 1940 the prices of ranges and refrigerators were increased a sufficient amount to cover allowances. Whether the refrigerator prices can be maintained remains to be seen. However, it is estimated the above additions to 1940 prices will produce about $15,000 more appliance profit, which is available to help pay for increased sales effort in 1940. Please observe the increase in markup is for increasing sales effort not to just produce more appliance profit.

TABLE IA—COMPARISON OF NEW AND OLD PRICES ON DELIVERY AND INSTALLATION

Appliance	Delivery Installation Charge—1938	Delivery Installation Charge—1939	Increase per Appliance
Range	$5.00	$9.50	$4.50
Kitchen Heater Range	9.00	14.00	5.00
Kitchen Heater Burner	8.25	14.00	5.75
Worcester Heater Burner	27.00	35.50	8.50
Refrigerators	13.00	15.00	2.00
Automatic Water Heater	27.50	30.00	2.50
Conversion Water Heater	25.00	26.00	1.00
Tank Water Heater	19.25	19.25	None
Conversion House Heater Burner	60.00	77.50	17.50

TABLE IB—ADDITIONAL CHARGES (Formerly Given with Installation)

Ranges:	
¾ in. cellar run to Kitchen	$ 8.00
¾ in. cellar run and risers to second-floor Kitchen	12.00
¾ in. cellar run and risers to third-floor Kitchen	16.00
Black flue pipe and fittings	4.00
Chromium flue pipe and fittings	6.00
Kitchen Heater Burners:	
Master Heat Distributor	$ 2.95
Black flue pipe and fittings	4.00
Chromium flue pipe and fittings	6.00
Oven heat reflector	1.00
Worcester Water Heater:	
Where three-way relief valve is required	$ 1.50
Where flue pipe is renewed black	4.00
Where flue pipe is renewed chromium	6.00
Automatic Water Heater and Conversion Water Heater:	
Where three-way relief valve is required	$ 1.50
Where heater is moved first floor to cellar	10.00
House Heating Jobs:	
For copper flue	$ 8.50
Where 1½ in. pipe run is required with connections	10.00
Where 2 in. pipe run is required with connections	20.00

Installation Charges

A study showed there was a loss of some $40,000 per year on delivery and installations. To correct this a new contract was made for delivery of appliances and the companies corrected certain practices which tended to keep these high. The companies also studied ways of reducing the actual cost of installing appliances. Based on this study new installation prices were set up. The adjustments were made as in Tables IA and IB:

In spite of these precautions the companies lost some $12,000 on installations in 1939, although they saved $28,000 over 1938. The losses in 1939 were due in part to the extra large increase in appliance sales and the inability to get them installed without considerable overtime which cost time and a half.

Reports

A new cost accounting record on New Business was set up so the Sales Department would know where they were heading. This year, based upon the Code of Accounts suggested by the Accounting Service Committee of New England Gas Association, reports have been enlarged to give better control. Any part of a business as dynamic as the Sales Department needs a sound accounting and reporting setup. Losses can be kept to a minimum only through a proper accounting system and one that gives the facts quickly.

What Has Been the Effect of These Policies?

The results of all these measures to safeguard New Business costs were quite gratifying. For each new dollar of Net Annual Revenue (not Gross Annual Revenue) added in 1939 over and above that added in 1938 the Sales Department spent only $1.15. They were shooting at spending $1.00 to get a dollar of additional Net. When we consider that many companies are spending *Two*

Dollars to get *One Dollar of Gross Revenue* this *additional sales effort* was quite profitable indeed. Thus, we can say that by increasing sales effort (Salesman Power) 91% the companies increased results, measured in terms of Estimated Annual Revenue 96.5% at an increased New Business cost of 17% or at a cost of $1.15 per dollar of additional Net Revenues gained through the larger sales effort.

Sum Total of Progress in Reducing Expenses Plus Increased Sales Effort

Starting in 1938 there has been a steady and consistent drive by this group of companies to reduce Production and Distribution costs and to improve the economy of the Sales Department. Also starting in an experimental way in 1938 and increasing three-quarters speed ahead in 1939 the sales effort has been stepped up. Now, what has been the effect on Revenues—Operating Expenses and Operating Income? If we take 1937 as a base we find 1939 compares as follows:

M.C.F. Sales Up 8% or 354,000 M.C.F.

Gross Revenues Up 3% or $133,000.00

in spite of rate reductions totaling $50,000.00:

Operating Expenses Down 10.3% or $336,000.00

in spite of producing 354,000 more M.C.F. of gas.

Net Operating Income Up 41% or $469,000.00

in spite of $40,000 more spent on maintenance in 1939 and in spite of $46,000 increase in New Business expense.

Revenue—As Yet—Only Slightly Affected by Sales Program

Gross Revenues, as shown above, have as yet been only slightly influenced by the larger sales activities. The appliances sold in 1939 were not all in use the full year of 1939; it is estimated only one-third of the Revenue added through New Business is *effective* in the year the appliances are sold. Furthermore, while the enlarged Sales Program has been satisfactory from a *cost* angle, the companies did not sell a sufficient volume of new appliances to make an impressive showing on revenues. They really need to sell a much greater volume than is being budgeted for 1940 to make an increase that is *outstanding*. For instance, if they sell the volume of appliances set up for 1940 Gross Revenues would only increase 6¾%.

TABLE C

Company's Sales Department now produces from its present Sales Program an Estimated Annual Revenue of	$100,000.00
Company wishes to increase Sales efforts so as to produce Estimated Annual Revenue of	200,000.00
Increase E. A. R. desired	$100,000.00
Present Sales Expense (Includes all necessary overheads, Holding Expense of present loads, Good-will building, etc.)	$200,000.00
Sales Expense estimated (To take care of the present Sales Program and secure $100,000 additional Estimated Annual Revenue)	$250,000.00
Additional Sales Expense	$ 50,000.00

How Earning Statement Looks

(A) Without Amortization Plan

The company's operating statement would reflect the above transactions as follows:

Operating Revenues would Increase ⅓ of $100,000 (As ⅓ of the E.A.R. would be effective in year expense is incurred)		$33,333
Operating Expenses would increase cost of gas	$20,000	
New Business Expense increase	50,000	
Cost of Servicing during Warranty increase (No est.)	.....	70,000
Net Operating Income *Decrease*		$36,667

Thus, the Net Revenues would be decreased $36,667 although the additional sales costs would be fully justified.

(B) With Amortization Plan

On an *amortization basis* the larger Sales program would show up as follows:

Operating Revenues would increase as before (⅓ of $100,000)		$33.333
Operating Expenses would increase cost of gas	$20,000	
New Business Expenses amortized 5 year—$50,000 / 5	10,000	
Cost of Warranty Servicing (No est.)	.....	30,000
Net Operating Income *Increased*		$ 3,333

What These Sales Programs Prove

There are in New England gas companies that show 10% to as high as 20% increase in gas revenues for 1939 over 1938, and in other sections similar or even larger increases are shown. Thus, the efforts put forth by this group of companies are feeble indeed when compared with these real aggressive companies. The little program of sales expansion outlined herein is noteworthy only because it adds five companies, Worcester, Cambridge, Framingham, Hyde Park and New Bedford, to the others here in New England that have done a *reasonably satisfactory* job on House Heating sales in one year. It also adds, to the mounting evidence, another group of companies that have *doubled* Domestic sales results by *doubling manpower*—which again proves *increased* manpower is the *one most* important factor in increased sales. It also demonstrates that added Sales effort produces increased results at a low cost. In other words, there is an *increment New Business Cost* for additional revenues and this increment cost may be of the order of $1.00 of New Business expense to $1.00 of *Net* (not Gross) *Revenue* added. Thus, the increase in Net Revenue will in one year *offset* the *increase* in New Business expense required to secure the increased Net Revenue.

The Gas Industry Must Buy Increased Earnings

Increased earnings must be bought and paid for; furthermore, while it may be possible to get a dollar of Net Earnings for each *additional* dollar of New Business expense, yet, as pointed out previously, the increased net earnings will not be available

in the year the *additional New Business expense* is incurred. Thus, for instance, if, in 1940, you wish to *buy* a $100,000 of Net earnings and you spend in 1940 a $100,000 to secure them, your full $100,000 of expense will go into your operating costs while only one-third or $33,333.00 of Net Revenue will get into your till in 1940. Hence, your Net Operating Income will be reduced in 1940, $100,000—$33,333=$66,667. Here, in a nutshell, is one of our major problems. How to maintain earnings and still *buy* the additional net we really need to pay a reasonable return on our investments? Of course, once we spent out $100,000 for New Business we do not have to spend that gain unless we want in 1941 to add another $100,000 and so on to our Net earnings. The $100,000 of Net earnings we buy in 1940 will be with us, or most of it, for five or ten years, at least long enough to pay back our $100,000 of sales costs and give us some additional Net earnings.

Why Not Amortize and Pay Sales Costs Over Period of Years?

Since few gas companies are in a position to stand a temporary shrinkage in earnings why not amortize Sales costs over a reasonable period of years and pay for it out of the *Additional Net Revenue created by the additional Sales Expense?* We have been running our business as though we had only the one year's profit to pay for Sales costs, where, as a matter of fact, we know the average useful life of various gas appliances is well beyond five years. Amortizing the *additional* Sales Expense would prevent an impairment of our earning statement. For instance, let's take an example Table C. Thus, the earning statement would show an increase.

Naturally amortizing the increased sales expense does not help the cash position. Where cash is needed to pay for the extra sales effort it will be necessary to convince the banks of the soundness of your program and secure the funds from them. This has been done. The manufacturer should also be interested in supplying such funds.

The above are merely examples to illustrate the problem and a possible solution. You will observe it is not proposed to amortize the *entire* Sales Expense over a five year period but only the *additional expense* involved in a larger Sales Program. A company might set up a five or ten year *average* Sales Expense as a *base* (assuming this is the normal expense of holding present business and adding enough new sales to offset losses) and any Sales Expense beyond this could be amortized. The Gas Industry must get a very much larger volume of sales and it must find a solution to the *temporary shrinkage* in earnings and cash position that is bound to follow a larger Sales Program. We are now pretty much in the same predicament as the Finns. We have excellent Salespeople—in fact the average Sales production of a gas salesman is greater than that of his competitor—but our Sales Departments are greatly outnumbered so we need more Salespeople in the field if we are to hold our own and gain our rightful place in the fuel market.

TABLE D

Number Domestic Meters		127,000	
Number Commercial Meters		6,880	
Number Industrial Meters		700	
Total Meters (Inc. Municipal)		135,679	
Domestic Salesmen	90	Dom. Meters/Salesman	1,500
Domestic Supervisors	9	Dom. Salesmen/Supvr.	10
House Heating Salesmen	30	Dom. Meters/Salesman & Engineers plus H.H. Supervisor	3,400
House Heating Engineers	6		
House Heating Supervisors	4		
Industrial Salesman	4	Industrial Meters/Salesman	175
Commercial Salesmen	7	Commercial Meters/Salesman	1,000
Home Service (2 part time Elec.)	12	Meters Home Service Rep.	11,000
Sales Managers	5		
Total Sales People	167		

What's Ahead?

This coming year will be a difficult one because of mounting fuel prices, taxes, etc. In the group of companies mentioned Gross Revenues obtained as a result of the larger Sales Program in 1939, plus the economies already established or in process of being placed in effect will just about maintain the same Net position. This group is shooting for greater sales in 1940 and unless some unforeseen factor prevents hopes to carry through the year on a Sales Program at *full speed* instead of three-quarters as was the case in 1939. Objectives are as follows:

Company Sales Only—No Dealer Sales Included:

	1940	*% Increase over 1939*
Ranges	3150	47%
Automatic Water Heaters	1760	104%
Kitchen Heating	2050	82%
Tank Heaters	785	265%
Refrigeration	2650	83%
House Heating	1205	40%
$ Volume (Installed)	$1,141,510	102%
Gross E.A.R. (Appliance Only)	305,830	73%
Net E.A.R.	200,763	100%
Net New Business Expense	325,000	7%

Estimated cost per dollar of *increased* Net Revenue budgeted over 1939 is 25 cents instead of $1.15 spent in 1939 for *increased* Net over 1938.

Above table gives the number of customers and the sales force estimated to secure the above sales objectives:

The ability to secure the objectives set up for the New Business Department is dependent on having a *full* complement of salesmen as above outlined. *If fewer* than the above sales force is used then results can be expected to be *reduced accordingly. The law of sales* can be expressed in a formula which is true for a *given set of conditions*—this law is: "One salesman can sell a certain number of appliances per year. If you want to *double* your *results double* your *sales force.*" If we work on the law of averages we can predict our sales accomplishments within a very close range. This does not mean that manpower alone is the answer—but under a *given set of conditions* results will be in *direct proportion* to salesmanpower.

Opportunities Never Greater

We here in New England have an opportunity to set a pace for gas company progress available to no other sections. We have the market and our customers have the ability to buy far in excess of other sections. We have demonstration after demonstration of successful Sales Programs in other sections of the country with nothing like our opportunities. We also have here in New England companies with outstanding sales accomplishments on *individual* appliances. All we need is to apply the Sales methods used by these successful companies in promoting *each individual* appliance to *all* appliances with *equal emphasis* and our sales curves will respond accordingly. Our future hopes lie in our ability to seize these opportunities while we may. Whether or not we continue to progress and win over our competition does not rest with the superiority of our product, as great as that may be, but on whether we can *outsell* them. We *can* do so!

Book Reviews

"The Market for Central Automatic Heating." A report prepared by the Research Department of Industrial Training Institute, 2130-2158 West Lawrence Avenue, Chicago, Ill.

The subject is approached from the standpoint of population changes, per cent of urban population, types of dwellings, types of heating systems in various parts of the country and types of fuel now used. The recent growth and position of oil burning furnaces, gas fired systems and solid fuel automatic stokers is then considered.

The final conclusion is as follows:

"This study indicates that during the next decade the automatic heating industry should enjoy a very healthy growth and development and those who are in it will find it unusually profitable provided that they proceed along sound marketing lines. The next ten years will show an upward trend of sales volume for the industry as a whole and for the three broad divisions of it which we have studied, namely, the oil-burner, gas, and coal-stoker fields.

"While it is extremely dangerous to draw individual conclusions concerning the three component parts of the market, our study, nevertheless, suggests the following:

"1. That the market for gas heat will continue as it has in the past to be influenced less by the efforts of those who manufacture the equipment than by the companies who supply the fuel. The trend of the gas heat market will depend very largely on local utility companies and the policies of the federal commission.

"2. The market for oil burners will present those characteristics which are found in stabilized industries and markets. Gross volume of sales will undoubtedly increase but the comparative position of oil burners in the heating market will in all probability decline.

"3. The coal-stoker market will undoubtedly provide the greatest opportunity for promotion and development. This market has a rich future ahead of it and will probably offer the best opportunities during the next ten years for the manufacturer who is anxious to explore a rich and relatively undeveloped field. It is our belief that the greatest profits and the greatest opportunities during the next ten years lie in this particular area of a broad market which in its entirety is in a healthy growing condition."

"Industrial Hazards of Static Electricity." By Harold Joe Davis, Tulsa, Oklahoma. Copies obtainable direct from author at 25c each.

This little 9-page booklet covers briefly a class of industrial hazards which is often overlooked. The subjects covered are: The Human Body, Shoes, Ionization, Humidification, Belt Dressings, Grounding and Bonding, Hazards of Spray Gun Painting and Explosions.

News of the Gas Industry

Gas Range Presentation at Chicago

On Tuesday, February 27, the Peoples Gas Light and Coke Company, Chicago, Illinois, staged, without question, the most dramatic presentation of modern gas ranges ever witnessed in the Gas Industry.

One thousand key Chicago department store, furniture store, hardware and major appliance dealers, together with their wives, sweethearts and friends, gathered in the Grand Ball Room of the Hotel Stevens for a gala showing of the 1940 modern gas cooking equipment. Against a velvet draped background, on a specially built dais. twenty-one deluxe gas ranges representing that many of the industry's leading manufacturers, were displayed in a mammoth pyramid formation. At the peak of the pyramid a glittering sign fourteen feet in diameter awed the dealers with its striking message regarding the 1940 showing.

A delicious dinner was topped off by a cleverly designed and served dessert of ice cream miniature CP gas ranges, representing the sweet profits bound to come to those dealers who "Join the Parade to Profits" under the leadership of The Peoples Gas Light and Coke Company.

Marvin F. Boss, Manager, Dealer Division of Peoples Gas Light and Coke Company, after appropriate and stimulating remarks ushered before the dealer gathering four additional speakers in rapid order; each address requiring less than fifteen minutes—and straight to the point.

B. H. Wittmann, Manager, Domestic Sales Department, The Peoples Gas Light and Coke Company, outlined the company's policy regarding dealer cooperative efforts for 1940. At the point where Mr. Wittmann announced that there would be no change in policy and that 1940 procedure would be exactly the same as that during 1938 and 1939, spontaneous applause indicated that this utility is on the right track for city-wide coverage and range merchandising.

J. T. Meek, Executive Secretary of the Illinois Federation of Retail Associations, ably followed with confirmation of the fact that the relations and policies in the Chicago area as regards dealer and utility merchandising might well serve as a guide to other communities throughout the nation.

F. X. Mettenet, Vice President of the local utility, then presented forceful facts to substantiate the previous praise of the Chicago plan. He cited the fact that 84,400 gas ranges were sold in the Chicago area during 1939, which represented an increase of 23.9% over 1938. He set up as 1940 goal 100,000 modern gas range sales, based on the market of 830,000 users of gas equipment in that area—500,000 of whom are badly in need of "modern gas cooking equipment which will properly interpret our fuel."

R. S. Agee, Sales Promotion Manager, Association of Gas Appliance and Equipment Manufacturers, representing the cooperating manufacturers in the Chicago market, closed the meeting with a fifteen minute parade of stimulating merchandising and sales helps. He pointed out how the largest A.G.A. advertising appropriation ever raised would bring to American consumers 95 million messages on the superiority of modern gas cookery—*"2,578,603 right here in Chicago!"* In rapid fire order he then displayed the numerous sales helps offered to range dealers through the efforts of the manufacturers who have made possible the Certified Performance Gas Range Program. He stated that merchandising tactics based on price emphasis are losing ground, and said, "Gas ranges have been promoted at cut prices so long that the customer was beginning to doubt all claims for sales or special reductions. The consumer got so fed up with it all that price alone is no longer an important sales appeal." He added, "There has been enough evidence collected to fill a moving van to prove that when Mrs. Homemaker walks into the dealer's store with a good credit rating and an itch to own a new gas range. of more interest to her than price are the features which will assure her of Certified Performance from that equipment. If you could place dictaphones on the bridge tables of American homes you would find that the customers are talking more and more of waterless cooking, the preservation of vitamins, low temperature cookery of meat to cut shrinkage, smokeless broilers, cooler kitchens—everything but price or a 'cheap' gas range. This array of information bore out the profit possibilities of promoting quality in cooking equipment such as is represented by the now famous CP Gas Range."

The business sessions of the meeting were interestingly and entertainingly sprinkled with musical numbers by a popular orchestra and song and dance teams.

The meeting was brought to a dramatic close by H. D. Valentine of the local utility who, with a blare of trumpets and dramatic unveilings presented the twenty-one de luxe gas range models, introduced the manufacturers' representatives operating in the Chicago area, and gave away through prize drawings, the twenty-one samples which were on display.

Following are the manufacturers cooperating with the utility in this very dramatic meeting, whose models were so prominently displayed:

A-B Stoves, Inc., American Stove Company, Caloric Gas Stove Works, Cribben and Sexton Company, The Crosley Corporation, Crown Stove Works, Detroit-Michigan Stove Company, Detroit-Vapor Stove Division (Borg Warner Corporation), Eagle Foundry Company, The Estate Stove Company, Eureka Products Corporation, Florence Stove Company, Glenwood Range Company, Hardwick Stove Company, A. J. Lindemann & Hoverson Co., The Moore Corporation, Odin Stove Manufacturing Co., Geo. D. Roper Corporation, Sampson Electric Company (Norge), The Tappan Stove Company, Welbilt Stove Company.

Ohio State Announces 3-Day Special Welding Engineering Course

One year ago the Ohio State University established a four year curriculum in Welding Engineering to meet the apparent need for collegiate education in this field. The course draws together the basic sciences necessary in the training of an engineer for service involving the use of welding.

After the inception of this course, the Welding Division of the Industrial Engineering Department, which administers the course, discovered that there were many practicing engineers who needed, but lacked, basic training for welding engineering. The Division felt a distinct obligation to provide these men with an opportunity to get basic instruction in some of the fundamentals which form the Welding Engineering curriculum.

Accordingly, a Special Short Course (of three day's duration) in Welding Engineering has been scheduled for April 16, 17 and 18. During these three days, three classes will be held daily on such subjects as :—Welded Joints, Fundamental Mechanics, Welding Symbols, Production Welding, Etc. In the case of Welded Joints several classes will be devoted to this subject covering it progressively. Lectures will be given by prominent engineers in the welding field, as well as by members of the University staff.

Information on this course is obtainable by writing J. R. Stitt, Assistant Professor, Welding Engineering, Ohio State University, Columbus, Ohio.

Ewald With Porcelain Enamel Institute

Harry Ewald, formerly sales manager of the range division of Landers, Frary & Clark, New Britain, Connecticut, joins the regular staff of the Porcelain Enamel Institute. 612 N. Michigan Ave., Chicago, as Director of Merchandising.

He will head up a comprehensive service activity among manufacturers, distributors and dealers of refrigerators, ranges, heaters, washers, ironers and other appliances to assist with the promotion of porcelain enamel as a finish. Recent surveys undertaken by the Institute show a high degree of acceptance among appliance users for porcelain enamel, and Mr. Ewald's activity is directed at assisting appliance manufacturers in capitalizing that acceptance.

The Coming Convention of the A.G.A. Natural Gas Section

Distribution Conference to be Held Concurrently

When the 35th annual Natural Gas Convention meets on May 6-10, it will be the first time that this group of natural gas men has met in Houston, Texas. It will also be the first combined meeting of the Natural Gas Convention with the American Gas Association's Distribution Conference which is holding its 17th annual meeting. It is expected that this joint meeting will draw a record attendance from all parts of the United States and Canada.

Houston is a logical setting for a natural gas convention. It is an important city centered in one of the greatest natural resource territories in the world and its inspiring growth and continued expansion that of the natural gas industry. Houston is also a beautiful city and exceptionally well fitted to receive a large convention. In addition, a trip to Houston makes possible interesting vacation visits to other famous sections of the Southwest and brings the Mexican border close enough to make a visit there practical.

The Natural Gas Convention program has been designed along practical lines and carefully planned to cover all phases of the natural gas industry so that every executive and employee may know what his industry has accomplished up to now and what it intends to accomplish in the future. Many of the papers are the result of years of research.

Research plays an important role in the 1940 Convention and is the background for an important address at the General Session on May 7. At that meeting Mr. Herbert W. Graham, Director of Metallurgy and Research for the Jones & Laughlin Steel Corp., Pittsburgh, Pa., will speak on the "Contribution to the Natural Gas Industry by Research in the Steel Industry." Mr. Graham is at the head of a department which during the past year or so has attracted the attention of the entire steel industry and steel consuming industries as well. The most recent development, which created a sensation in the industry, was the invention by his department of the first scientific control ever applied to the production of steel by the Bessemer process. Under Mr. Graham's direction, this department, about a year ago, established a Pilot Plant Research Laboratory with miniature steel furnaces, rolling mills, and other steel making and finishing equipment. In this first and only Pilot Plant in the steel industry, formulas and controls are developed and proved before they are applied commercially, successfully bridging the gap between research and production.

Research will also be the basis for an address by Mr. Frank C. Smith, President of the Houston Natural Gas Company, and Chairman of the American Gas Association's Committee on Fundamental Research, and by Mr. Howell C. Cooper of the Hope Natural Gas Company in Pittsburgh and Chairman of the Natural Gas Section's Main Technical and Research Committee.

In addition to the comprehensive sales programs of the Domestic and Industrial Natural Gas Sales Conferences with papers concerning all phases of resident, commercial and industrial sales presented by leaders in the industry are the Transmission and Production Conferences which are of particular interest to operating men.

The Production Conference this year will feature a Symposium entitled "Our Experiences with the Underground Storage of Gas." This subject will be discussed by such authorities as Carl U. Daniels, Vice-President of the Oklahoma Natural Gas Company, Tulsa; Fenton Finn, Geologist of The Peoples Natural Gas Co., Pittsburgh; Porter D. Mellon, General Superintendent and Chief Engineer of the Canadian Western Natural Gas, Light, Heat & Power Co., Calgary, Alberta, Canada and by J. H. Newlon, Geologist and Superintendent of Production for the Equitable Gas Company, Pittsburgh.

Coupled with this timely symposium will be a paper by S. A. Chadwell of The Ohio Fuel Gas Company on "Natural Gas Storage and Its Effect on Transmission Operations." The second session of the Production Conference will feature a symposium on "Drilling Beyond the First Mile" and will be presented by C. E. Reistle of the Humble Oil and Refining Co., Houston, Texas and H. A. Wallace, Jr., of the United Fuel Gas Co., Charleston, West Virginia.

E. HOLLEY POE
Secretary Natural Gas Section of A.G.A.

The Transmission Conference will be made up of a group of unusually up-to-the-minute papers on advanced phases of pipe line construction and operation.

Construction and operating features of major pipe lines will be handled by H. J. Carson, Vice-President of Northern Natural Gas Company, Omaha, Nebraska, whose subject is "Large Welded Pipe Lines."

These and many other papers of a practical nature will bring the pipe line operator up to date on all the technological advances in the construction and operation of pipe line systems.

Many new uses have been found for natural gas in industrial plants during the past few years and H. O. Loebell, one of the outstanding engineers in the business will present a paper on the subject "Improvements in Industrial Processes Through Advancement in Heat Application."

For those interested in distribution, the Program Committee has worked out a well balanced program on all phases of this important part of the natural gas business. Among the interesting papers on this program are:

"Determination of the Current Required for Cathodic Protection."
By Dr. Scott Ewing, Research Associate, National Bureau of Standards, Washington, D. C.

"Use of Pressure Regulators on Gas Appliances."
By H. L. Masser, Executive Vice-President, Southern California Gas Co., Los Angeles, Calif.

"Electrolysis Mitigation for Protection of Underground Distribution Systems Within Cities."
By R. J. Kuhn, Consulting Engineer, New Orleans, La.

With a four day program of the calibre illustrated, it is believed that the 1940 Natural Gas Convention will prove to be one of the most informative meetings ever held and every natural gas man will want to plan to be in Houston from May 6 to 10. The Rice Hotel is Headquarters.

Direct Air Heaters. Despatch Oven Company, Minneapolis, Minn., describes in their new bulletin No. 72 a direct gas fired air heater with controlled combustion rated at 250,000 Btu per hour. Application of the equipment to various industries is outlined. Indirect air heaters are illustrated and described in bulletin No. 74.

Cooling Controls: A Sarco Company bulletin No. 197 describes recirculating controls for large and small engines and brine coolers; throttling controls for engines and compressors, condensers and degreasers; refrigerating controls for cold storage, air conditioning and drinking water. For copy address Sarco Co., 183 Madison Ave., New York.

1940 EDITION AMERICAN GAS CATALOG AND HANDBOOK

Important data material which we want to include in 1940 Edition of American Gas Catalog and Handbook cannot be completed until April 15th. As the Handbook is published every second year, we want to bring all data material up to date.

Therefore, the Handbook will be issued during May instead of April as previously announced. A copy will be sent to every subscriber to the Journal when published.

February Winners in Refrigeration Sales Drive

Exceptional gas refrigerator sales have placed twenty-five gas companies and one hundred and fifty salesmen in the February group of winners in the current year-round gas refrigeration sales drive sponsored by the American Gas Association, it was announced by Bernard T. Franck, chairman of the Refrigeration Committee.

There were sixty-five salesmen who, in addition to their February cash awards, received a bonus of twenty per cent extra of the month's award for closing four or more sales in January.

The twenty-five gas companies which have received the distinction of being known as the "February Leaders for the Month," are as follows:

In the *Greatest Number of Installations Per 10,000 Meters,* the following companies are winners in their divisions:

Division 1—Washington Gas Light Company, Washington, D. C.; Division 2—Brooklyn Borough Gas Company, Coney Island, N. Y.; Division 3—Lynchburg Gas Company, Lynchburg, Virginia; Division 4—Consumers Power Company, Lansing, Mich.; Division 5—The Gas Service Company, Merriam, Kansas.

Winners in the greatest total installations reported are:

Division 1—The Brooklyn Union Gas Company, Brooklyn, N. Y.; Division 2—Milwaukee Gas Light Co., Milwaukee, Wisc.; Division 3—Atlantic City Gas Co., Atlantic City, N. J.; Division 4—Louisville Gas & Electric Co., Louisville, Ky.; Division 5—Macon Gas Company, Macon, Ga.; Division 6—Virginia Gas Distribution Corp., Staunton, Va.

The following companies with their respective divisions are winners in the *Greatest Per Cent of Increase in Installations Over the Reported 1939 Installations:*

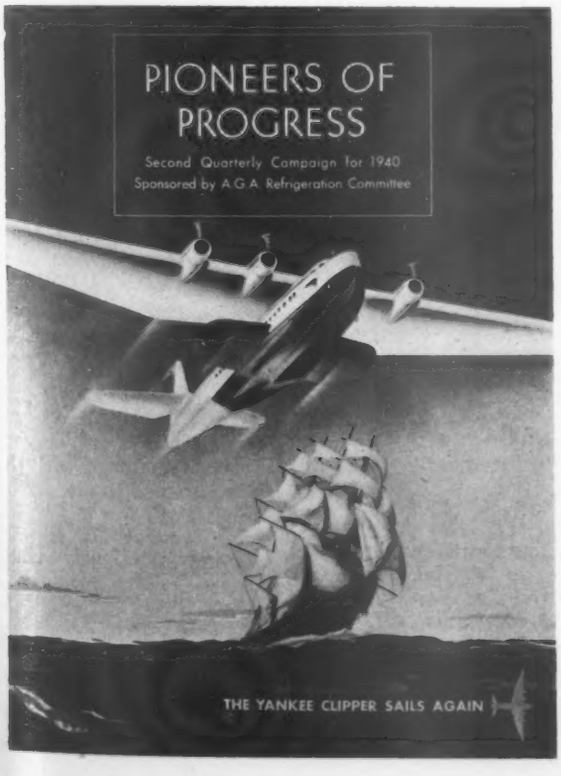
Division 1—Kings Appliance Corporation, Brooklyn, N. Y.; Division 2—Western United Gas & Electric Co. (Downers Grove Div.) Aurora, Ill.; Division 3—Conewago Gas Company, Hanover, Penna.; Division 4—Kansas City Gas Company, Kansas City, Mo.; Division 5—Natural Gas Company of W. Va., Alliance, Ohio; Division 6—The Manufacturers Light & Heat Co., Follansbee & Wellsburg, W. Va., Hoosier Gas Corporation, Vincennes, Indiana, (Tie).

In the *Greatest Per Cent of Replacements of Outmoded Automatic Refrigerators Against Total Installations Reported,* the winning companies with their respective divisions are as follows:

Division 1—Kings Appliance Corporation, Brooklyn, N. Y.; Division 2—Cambridge Gas Light Co., Cambridge, Mass.; Division 3—Roanoke Gas Company, Roanoke, Va.; Division 4—The Manufacturers Light & Heat Co., Steubenville, Ohio, and Division 5—The Manufacturers Light & Heat Co., East Liverpool, Ohio.

The winner in the *Greatest Number of Individual Retail Installations Sold at the Prevailing Retail Prices and Under the Policies of Each Company* is the Southern California Gas Co., Los Angeles, Calif., —Division 1 (The only eligible division).

The winner in the *Greatest Number of Installations Per 1,000 Meters,* (which was limited to the sixth division,) is the Georgia Public Utilities Company, Aiken, S. C.


PIONEERS OF PROGRESS
Second Quarterly Campaign for 1940
Sponsored by A.G.A. Refrigeration Committee
THE YANKEE CLIPPER SAILS AGAIN

Cover of the portfolio for the second quarter campaign of the American Gas Association Refrigeration Campaign entitled "Pioneers of Progress" which has been sent to gas utility executives throughout the country. The drive covers the period of April, May and June.

The portfolio outlines the objectives of the Spring and Summer portion of the year-round gas refrigeration sales drive entitled "Life Begins in '40 for Gas Refrigeration." Awards for gas utilities and salesmen include thirty Bermuda flights via Pan American clipper ships for twenty-four representatives of the same number of gas companies which receive the "Annual Best Performance Award" in their respective classifications for the full campaign period, and the six salesmen who lead their respective divisions in high sales for the three-month period.

Spring and Summer A.G.A. Refrigeration Plans Announced

"Pioneers of Progress," symbolizing new horizons and new frontiers for gas refrigeration in the current year-round sales campaign sponsored by the American Gas Association, is the theme for the second quarter drive which covers the months of April, May and June. Twenty-four cash prizes for the winning gas utilities to be used for Victory Dinners for members of their sales forces; a handsome scale model of a Pan-American clipper ship; six "honor flights" for those salesmen who lead their division in sales, and monthly and quarterly cash awards for top salesmen, will be the rewards for winning gas utilities and salesmen in the second quarter drive, it has been announced by Bernard T. Franck, chairman of the American Gas Association Refrigeration Committee.

"A cash award will be given to each of the twenty-four winning gas companies in the Spring and Summer portion of the current year-round campaign to defray the expenses of a Victory Dinner for members of its winning sales force," Mr. Franck said. "We feel that these Victory Dinners will give the winning companies the opportunity to honor their salesmen and at the same time stimulate them to carry on their successful salesmanship.

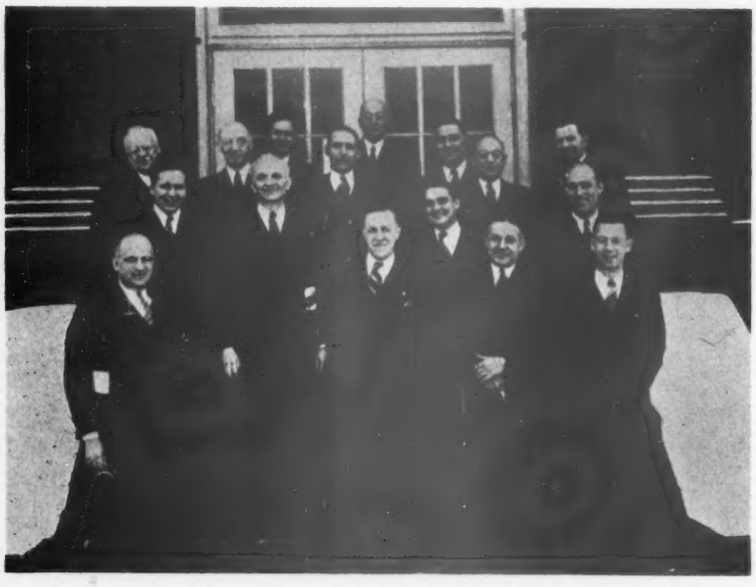
"There are also six 'honor flights' to be awarded to the six salesmen who lead their division in sales for the Spring and Summer campaign. These six 'sales pilots' will make the Bermuda trip in a Clipper Ship along with the twenty-four representatives of the winning gas companies who have won the 'Annual Best Performance Award.'

"Twenty-four large, handsome models of a Pan-American clipper ship will be awarded to the companies which lead in their respective divisions in the second quarter campaign."

Dates Set For West Virginia Meter School

At a meeting of the General Committee held in Morgantown, West Virginia, on February 16th, the dates of August 19, 20 and 21 were chosen for the Third Appalachian Gas Measurement Short Course.

The General Committee members shown in the accompanying photo are as follows:



GENERAL COMMITTEE FOR THE THIRD APPALACHIAN GAS MEASUREMENT SHORT COURSE

Top Row—Left to Right: W. A. Ehlers, Reynolds Gas Regulator Company; J. W. Allison, Monongahela West Penn Public Service Co.; G. R. Spindler, West Virginia University, Morgantown; Edwin Robinson, West Virginia Oil & Natural Gas Association; W. A. Staab, West Virginia University, Morgantown: E. M. Lockwood, Sprague Meter Company.
Second Row—Left to Right: C. B. Heist, Manufacturers Light & Heat Company; A. F. Kraus, Peoples Natural Gas Company; J. R. Sproat, Pittsburgh Equitable Meter Company; H. J. Wagner, West Virginia Public Service Commission.
Front Row—Left to Right: R. O. Borden, American Meter Company; R. W. Hitchman, Chairman, United Fuel Gas Company; Lawrence A. Hunter, Columbian Carbon Co.; Allen D. MacLean, Pittsburgh Equitable Meter Company; G. W. Harr, Monongahela West Penn Public Service Co.; T. K. Spalding, Owens-Libbey-Owens Company. Also present but not in the picture was B. P. Stockwell, West Virginia Public Service Commission.

In addition to selecting dates and formulating plans for this year's schools, the General Committee established sub-committees as follows: Program Committee, Chairman, B. P. Stockwell, West Virginia Public Service Commission; Housing and Registration Committee, Chairman, W. A. Staab, West Virginia University; Banquet and Entertainment Committee, Chairman, A. D. MacLean, Pittsburgh Equitable Meter Company; Exhibits Committee, Chairman, J. W. Allison, Monongahela West Penn Public Service Company; Publications and Publicity Committee, Chairman, R. S. Reed, Jr., Pittsburgh Equitable Meter Company; Rules Committee, Chairman, R. O. Borden, American Meter Company; Practical Methods Committee, Report No. 1 on "Testing Positive Displacement Meters in the Field," Chairman, J. E. Overbeck, Columbian Engineering Corporation; Practical Methods Committee, Report No. 2 on "Testing Orifice Meters," Chairman, A. K. Kraus, Peoples Natural Gas Company; Educational Committee, Chairman, H. J. Wagner, Public Service Commission of West Virginia.

Panhandle Eastern Directors

Panhandle Eastern Pipe Line Company, at their annual stockholders' meeting in Dover, Delaware, in March, elected two new directors—Robert J. Bulkley and Richard C. Patterson, Jr.—and re-elected the following directors: Joseph A. Bower, Joe D. Creveling, A. Faison Dixon, Gano Dunn, William G. Maguire, Walter G. Mortland and Robert C. Winmill.

Convention of Florida-South Georgia Gas Meters Assn. April 21-23

The Florida-South Georgia Gas Meters Association will have a meeting April 21, 22 and 23 at the Hollywood Beach Hotel, Hollywood, Fla. A comprehensive program has been prepared and covers subjects of interest to the plant, service, sales and executive departments. A. H. Bruning is president of the association and C. D. Littlefield, chairman of the program committee.

CONVENTION CALENDAR

April

5 *Maryland Utilities Assn.*, Lord Baltimore Hotel, Baltimore, Md.

11-12 *Pacific Coast Gas Assn.*, Spring Technical Conference, Embassy Auditorium, Los Angeles.

15-17 *Midwest Gas Association*, Annual Convention, Lincoln, Neb.

16-18 *Southwestern Gas Measurement Short Course.* College of Engineering, University of Oklahoma, Norman, Okla.

17-19 *Missouri Association of Public Utilities.* Annual Convention, Elms Hotel, Excelsior Springs, Mo.

21-23 *Gas Meters Assn. of Florida and South Georgia,* Hollywood Beach Hotel, Hollywood, Fla.

May

6-10 *Amer. Gas Assn.* Natural Gas Section's Annual Convention, Rice Hotel, Houston, Texas.

6-10 *Amer. Gas Assn.* Annual Distrib. Conference, Rice Hotel, Houston, Texas.

13-14 *Indiana Gas Assn.*, Evansville, Ind.

14-16 *Penna. Gas Assn.* 32nd Annual Convention, Skytop, Pa.

18-25 *International Petroleum Exposition and Congress,* Tulsa, Okla.

20-22 *A.G.A.E.M.* Annual convention, French Lick Springs, Ind.

30-31 *Natural Gas and Petroleum Assn. of Canada,* Hotel London, London, Ont.

July

3-5 *Canadian Gas Association.* Annual Convention, Jasper Park Lodge, Alberta, Canada. Northwest Conference of Pacific Gas Association will hold joint sessions.

8-10 *Michigan Gas Assn.*, Grand Hotel, Mackinac Island, Michigan.

September

18-20 *Pacific Coast Gas Assn.* Annual Convention, Hotel del Coronado, Coronado, Calif.

26-27 *Empire State Gas & Electric Assn.*, Annual Convention, Westchester Country Club, Rye, N. Y.

October

7-11 *American Gas Assn.*, Twenty-second annual convention, Atlantic City, N. J.

A.G.A. Prizes For Student Courses

A prize of $50.00 will be awarded by the American Gas Association to the student completing the home study course on American Gas Practice offered by Columbia University and to the student completing the home study course on Natural Gas offered by the University of Kansas during the year from September 1, 1939, to September 1, 1940, and attaining the most comprehension of the subject matter.

Selection of the recipients will be made by the educators conducting the courses—Professor Jerome J. Morgan for the Columbia University Course, and Professor C M. Young for the University of Kansas Course. Both courses are sponsored by the American Gas Association and are supervised by advisory committees made up of eminent gas engineers appointed by the Association. The arrangement has proved to be ideal and the courses have met with universal satisfaction.

The course on American Gas Practice offered by Columbia University is divided into two parts. Part I treats the production of manufactured gas; Part II deals with the distribution and utilization of gas.

The course on Natural Gas offered by the University of Kansas covers the entire field of natural gas, from origin to utilization.

Detailed information on these two home study courses, enrollment in which can be made at any time, will be gladly supplied by the Association.

The purpose of these prizes is to stimulate the interest of the younger men in the gas industry to acquire more knowledge so that they may increase their value in their present position and be afforded greater opportunity for advancement in the future.

Similar prizes were awarded last year; the successful students being Marden E. Cobb of the Republic Light, Heat & Power Company, Inc., Buffalo, in the Kansas Natural Gas Course, and Chester Rawlings Mathes of The Brooklyn Union Gas Company in the Columbia Course.

M.I.T. Division of Industrial Cooperation

Nathaniel McL. Sage, who is widely known in business and industry throughout the country as Placement Officer of the Massachusetts Institute of Technology, has been appointed Director of the Institute's Division of Industrial Cooperation. He has been acting head of the division since the death last September of Professor Charles L. Norton, who for many years had charge of Technology's research services in the solution of industrial problems. Mr. Sage will continue as placement officer.

The Division of Industrial Cooperation came into existence in 1920 under the direction of Dr. William H. Walker, professor of chemical engineering, who was succeeded in the same year by Professor Norton. Under his guidance the activities of the Institute in applied research were centralized and the scope and value of this cooperative service to industry was expanded.

In addition to research for industry, the division cooperates frequently with the various technical departments of the civic, state, and Federal governments in the solution of important scientific and engineering problems affecting the welfare of the public.

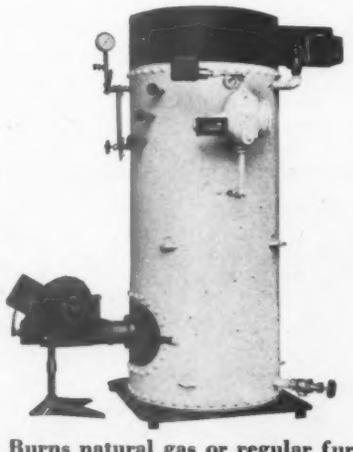
Porcelain Enamel Supplies

The Porcelain Enamel & Manufacturing Company, Baltimore, Md., has released a complete set of standard specifications for porcelain enamel supplies, and gives accurate, detailed information to purchasing agents and plant superintendents.

In announcing this innovation, H. G. Wolfram, Vice President in Charge of Engineering, said, "These specifications not only prescribe the grades of material which have been found most suitable in producing high-quality porcelain enamel ware, but they furnish as well methods of test whereby it is possible, when necessary, to determine whether or not materials purchased meet the specifications. The present specifications, where possible, present not only the pertinent physical and chemical requirements and methods of testing, but also outline in brief functions of the product in the enameling operation."

From time to time it is said additional specifications will be issued, and supplementary factual information furnished. The Standard Specifications were prepared by Lyman C. Athy, Director of Research, and George H. Spencer-Strong, Research Engineer at the Pemco Research Laboratories, Baltimore.

LATTNER
GAS — OIL BURNER
3 HP to 35 HP



Burns natural gas or regular furnace oils with equal efficiency.

P. M. Lattner Mfg. Company
Cedar Rapids, Iowa

Chinese Food Recipes for Home Preparation

A book of Chinese recipes for distribution to gas company customers through their sales and home service departments is announced by Louis Stotz.

Prepared by Mrs. Francis Shaw and Mabel Stenger, a Home Economics Consultant, with the aid of an experienced Chinese cook, this 32 page 6 x 9 guide to Chinese culinary gives all details of no less than 35 individual dishes and how to prepare them. Take your choice from Hang-Yen-Yok-Ding to Dow-Jay-Ngow-Yok-Soong (chopped beef and string beans to you).

Introductory pages deal with food preservation, hot water supply and automatic heat.

Back cover pages are left blank for imprinting gas company's advertisement. The recipe book is available in quantities through Edelmuth Co., 270 Lafayette St., New York, attention of Mr. Stotz.

Missouri Assn. of Public Utilities

The annual State convention of the Missouri Association of Public Utilities will be held this year at the Elms Hotel, Excelsior Springs, Mo., on April 17, 18 and 19. The membership of the Association includes virtually all of the privately-owned electric, gas, and water companies in Missouri.

Among the speakers will be: Col. Willard Chevalier, New York City, publisher of Business Week; Elmer F. Schmidt, Chairman, Natural Gas Section, American Gas Association, Dallas, Texas; W. J. Amoss, New Orleans Public Service, Inc., New Orleans, La.; R. M. Winsborough, Middle West Service Co., Chicago, Ill.; Charles T. Evans, Arkansas Power & Light Co., Little Rock, Ark.; George M. Burns, Director, Kansas City (Mo.) Safety Council; O. H. Day, Director, Vocational Education in the Kansas City (Mo.) Public Schools.

Some of the subjects will be: "Business Faces the Forties," "Gas Is Moving Forward," "What the Customer Thinks," "What About Fluorescent Lighting?" "What Do I Sell?" "Promoting Public Relations Through Safety," 'The Workman—Inspecting His Habits."

Cochrane Flow Meters in Cincinnati

Charles M. Chapman is now representing Cochrane Corporation on flow meters in the Cincinnati territory, covering parts of Ohio, Indiana, and Kentucky. Mr. Chapman's office is in the Schmidt Building, Cincinnati.

Executives Visit Recent Clark Compressor Installations

H. N. Mallen, President of Dresser Manufacturing Company, Bradford, Pennsylvania, and J. B. O'Connor, Vice-President of Clark Bros. Co., Inc., Olean, New York, recently completed a trip through the various fields in Texas, visiting the Clark installations.

Atmospheres, Small Equipment, and Publicity Considered by N.E.G.A. Industrial Division

The industrial Gas Division of the New England Gas Association insured extra value for its Bridgeport, Conn., meeting on Friday, March 8, by scheduling it coincident with a New-England-wide Exhibit of Industrial Tools and Plant Equipment sponsored by the Bridgeport Tool Engineers Association at the State Armory in that city. Hence, 40 New England industrial gas men were able to hobnob with customers and representatives of allied trades, join plant inspection parties, and see a good industrial equipment show, all in addition to attendance at the Spring meeting among themselves which brought them to Bridgeport and the Hotel Stratfield.

Cecil C. Ogren, Boston Consolidated Gas Company and 1939 Chairman of the Division, presided both at the luncheon and at the business session and meeting which followed. Subsequent to the election by unanimous ballot of the new chairman, Ralph D. Hawkins, Bridgeport Gas Light Co. and his officers and directors for the coming year, papers were delivered by: J. A. Comstock, Consulting Metallurgist, Surface Combustion Corp., Toledo, Ohio; Herman Koester, (for W. Wirt Young, absent through family illness), W. Wirt Young Co., Gas Consultants, Watertown, Conn.; and Harry W. Smith, Jr., Director of Industrial Publicity, American Gas Association, New York.

Mr. Comstock's remarks concerned the most recent developments in the tricky but promising field of furnace atmospheres for annealing, hardening, tempering and nitriding. Particular stress was laid upon the chemical equilibria of gas- and charcoal-produced protective atmospheres in the heat treatment of modern tool steels, and upon the design and the capabilities of newer atmosphere furnace equipment.

An analysis of the New England market for small gas furnace applications was presented by Mr. Kestor for Mr. W. Wirt Young, and included a complete breakdown by size of all furnace-using industries in one medium-size New England industrial city. The study showed the great significance to any gas company of the aggregate load represented by the available business with small heat treating or other furnace units, and suggested procedures for making this load easy to obtain.

Mr. Smith outlined the nature and scope of the American Gas Association publicity program in behalf of industrial gas. Exhibits from the platform dramatized both the large volume of favorable publicity obtained annually by the A. G. A. Industrial Gas Section as well as the tremendous spread of non-residential gas customer interests represented by the 109 trade and business publications in which A. G. A.-developed industrial gas publicity has appeared in the past fifteen months.

A. S. A. Accepts Revisions for Gas Appliances

Ten sets of recommended revisions to American Standard Approval and Listing Requirements for various gas appliances and accessories sponsored by the American Gas Association have been adopted by the American Standards Association. These revisions bring up to date practically all current major gas appliance standards. They will become effective January 1st, 1941.

Among them are those for central heating gas appliances, clothes dryers, domestic gas ranges, hot plates and laundry stoves, gas space heaters, and gas unit heaters. The new American Standard listing requirements cover conversion burners, automatic pilots, and gas appliance thermostats. In addition, new American Standard installation requirements for conversion burners were adopted by the American Standards Association. New editions of these various revised requirements have just been published and distributed in the customary manner to all interested manufacturers.

In view of the large number of gas users who will be benefited, perhaps the most outstanding provisions incorporated are those covering testing of central house heating appliances, space heaters, and unit heaters for use with bottled gases.

During recent years there has been a considerable increase in the use of propane and butane gases as well as mixtures of the two, particularly in rural sections and where city gas lines have not yet been extended. As a result of satisfactory consumers' experience with domestic gas ranges and water heaters approved for use with these liquefied petroleum gases, there has been a corresponding increased demand for Laboratories' approval on other gas burning equipment.

Additional requirements adopted by the American Standards Association make it possible for manufacturers to provide approved appliances for use with liquefied petroleum gases to these customers. With exception of gas refrigerator requirements, which will unquestionably incorporate similar provisions in their next revision, all major types of gas appliances may now be tested and approved in the Laboratories for use with liquefied petroleum gases. Similarly, provisions were incorporated to approve these appliances for use with butane-air gas.

Dominion-Republic Employee Speaking Contest

In order to give all of the employees of the company an opportunity to develop their ability to speak clearly and forcibly, a speaking contest is being sponsored by Mr. S. B. Severson, Vice President and General Manager as a part of the recently announced Employee Development and Training Program.

It is anticipated that the talks will cover something of the employee's own job, its relation to company operations and personnel and how these factors can be used by the employees to make friends for the Gas Industry and promote better customer relations.

Elimination contests will be held in the ten operating divisions including the general office of this group of properties and the successful contestants will compete in a final contest to be held in May for the grand prize of a special week-end trip to New York City in the early fall.

In each of the local contests a prize of $10.00 and $5.00 will be paid to the successful participants.

In announcing the contest, Mr. Severson stated that "The ability of a person to speak before a group and to express himself clearly and forcibly is a recognized asset in the business world, and our employees should be given an opportunity to show and develop this ability."

The Dominion-Republic Group of Properties, Subsidiaries of the Cities Service Company, are the Republic Light, Heat & Power Co., Inc., serving Natural and Manufactured Gas to over 45,000 customers and communities in Western New York and the Dominion Natural Gas Co., Ltd., serving Natural Gas to 45,000 customers in Southern Ontario, Canada.

• BARBER

Gas Pressure
REGULATORS
for Reliability!

Certified by A. G. A. Testing Laboratory. Write for Catalog and Prices on Barber Conversion Burners, Appliance Burners, and Regulators.

THE BARBER GAS BURNER CO.
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CLEVELAND . . . OHIO

Sizes ¼" up

CRUSE-KEMPER COMPANY
STEEL PLATE CONSTRUCTION
AMBLER, PA.

GAS HOLDERS
HOLDER INSPECTION

RIVETED OR WELDED
FABRICATION & ERECTION

TANKS, BINS, FLUES
PURIFIERS, WELDINGS

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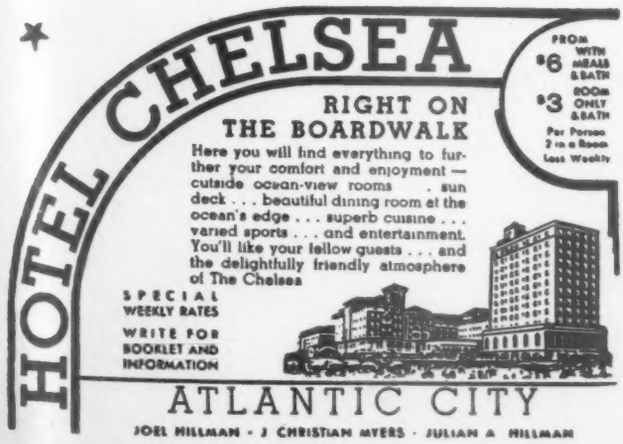
Wanted To Purchase

A used Connersville type booster, capacity 12,000 cu. ft. per hour, gas pressure 4 lbs., to be steam driven with either reciprocating or turbine drive. Full information pertaining to age, condition and other pertinent information along with price. The Newport Gas Light Company, Newport, R. I.

Foreman Wanted

A high grade working foreman is wanted by a water-gas Company in New England. Good wages will be paid. In application full record of experience is necessary. Address Box 116, c/o AMERICAN GAS JOURNAL, 53 Park Place, New York.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FROM $6 WITH MEALS & BATH
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Per Person 2 in a Room Less Weekly
Here you will find everything to further your comfort and enjoyment — outside ocean-view rooms . sun deck . . . beautiful dining room at the ocean's edge . . . superb cuisine . . . varied sports . . . and entertainment. You'll like your fellow guests . . . and the delightfully friendly atmosphere of The Chelsea
SPECIAL WEEKLY RATES
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ATLANTIC CITY
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SEMET-SOLVAY ENGINEERING CORPORATION

Blue Gas Plants — **Gas Purifiers**
Water Gas Machines — **Condensers**
Washer Coolers — **Waste Heat Boilers**
Naphthalene Scrubbers — **Producer Gas Plants**

40 RECTOR ST., NEW YORK, N. Y.

John V. Jirasek Joins Worthington

John V. Jirasek has joined the Worthington Pump and Machinery Corporation as a special representative to the petroleum and chemical industries.

A graduate in Chemical Engineering from the University of Prague, he did post graduate work at the Sorbonne in

John V. Jirasek

Paris. A citizen of the United States Mr. Jirasek has, in the past twenty years, both in the United States and in Europe, been engaged in research, experimental and development work with leading firms in the petroleum field. Recently he was associated with the Compagnie Technique Des Pétroles, European representative for the M. W. Kellogg Company and with the Sharples Corporation of Philadelphia, just prior to which he was connected with E. B. Badger & Sons Company in charge of their European business. He will make his headquarters at the general offices in Harrison, New Jersey.

Pittsburgh Equitable—Merco Nordstrom Hold District Sales Meeting

The final meeting in a series of district gatherings for the salesmen of the Pittsburgh Equitable Meter Company and Merco Nordstrom Valve Company was held at the factory in Pittsburgh during the week of February 19th with representatives from the Pittsburgh and Buffalo Sales Offices attending.

Starting early in January with a meeting in Tulsa, the Company has, at weekly intervals, held sales meetings in each District Office. Each meeting was conducted by Captain A. E. Higgins, Vice President and Sales Manager, who outlined to district men the sales objectives and merchandising plans for 1940. Chief Engineer A. D. MacLean presented the engineering aspects of recently introduced or improved products and open discussions were held under the direction of factory men in order that every salesman would be fully informed.

The representatives from the factory in Pittsburgh conserved time by flying from meeting to meeting in the company plane piloted by Captain Higgins.

Pittsburg Water Heater Corp. Appoints Texas Representative

The Pittsburg Water Heater Corporation announced the appointment, effective March 4th, of Mr. J. H. Schmidt as Direct Factory Representative in the State of Texas for Pittsburg Water Heaters manufactured by the corporation embracing a complete line of automatic storage, instantaneous and multi-coil hot water heaters of all sizes for residences, office buildings, public buildings and institutions.

Mr. Schmidt will make his headquarters at 3300 Main Street, Dallas.

New Valve Slide Chart

A novel slide chart has been prepared by engineers of the Merco Nordstrom Valve Company. It permits engineers to ascertain instantly the figure number of the valve in any available size for any pressure. Instead of leafing through an elaborate catalog, the engineer can use this slide rule chart which, by simple manipulation, locates and classifies the information.

The various tables are made up and remade by sliding a card back and forth under window openings in the slide holder. It simplifies selection of the proper types of Nordstrom lubricated valve to replace other valves of various pressure ratings. The chart includes information on semi-steel, steel and malleable iron valves.

Copies of the "Figure Number" Chart Form V-130 may be obtained from the Merco Nordstrom Valve Co., 400 Lexington Avenue, Pittsburgh, Pa.

Insulation Board: A thirty-six page booklet entitled, "The Story of Insulation Board," giving information regarding this type of insulation has recently been issued by the Insulation Board Institute.

Structural insulating board, as explained in the booklet, is essentially manufactured of synthetic "insulating" lumber produced in large units without knots or grain. Vegetable fibers, principally those of wood and sugar cane, are used in its manufacture.

The outstanding characteristic of insulating boards is that they combine strength with heat and sound insulating properties. The nominal conductivity is 0.33 and the tensile strength averages 175 pounds per square inch. It also effectively resists compression loads as well as transverse stresses. The sound absorbing qualities render insulating boards valuable for acoustical correction and sound quieting as well as for reducing machinery noises.

Copies may be obtained from the Insulation Board Institute, 111 West Washington St., Chicago, Illinois.

Obituary

E. R. GUYER

Edward R. Guyer, prominent Chicago manufacturing executive and immediate past president of the Association of Gas Appliance and Equipment Manufacturers died suddenly on Monday, March 18 of injuries sustained in a fall. He was 48 years old.

Mr. Guyer at the time of his death was first vice-president of Cribben & Sexton Co., Chicago, Ill., manufacturers of gas ranges. During his career in the manufacturing business he attained an enviable

Mr. Guyer as he addressed the A.G.A.E.M. Annual Meeting at New York in October 1939.

reputation as a brilliant executive. His first major executive position was as production manager of the Moline Plow Works; then as superintendent of the Rock Island Stove Company and finally to Cribben & Sexton Company.

Mr. Guyer was president of the Association of Gas Appliance and Equipment manufacturers during 1938-39 and was also past president of the Manufacturers Protective and Development Association. At the time of his death he was a member of the Boards of the American Gas Association and the Association of Gas Appliance and Equipment Manufacturers.

Mr. Guyer was educated at the Hill School and was graduated from Cornell University in the class of 1915 with a mechanical engineering degree. While in college he was a member of the varsity football team in 1912-13-14, and also a member of Kappa Alpha Fraternity and the Mummy Club. He was a member of the University Club of Chicago, Chicago Golf Club and Cornell Club of New York. During the World War he served in France as a lieutenant.

Roots-Connersville Blower Corp., Connersville, Ind., has just issued Bulletin 260-B14C, covering its complete line of automatic condensate return units for vented gravity systems. These units cover a range up to 500 boiler horsepower, and at pressures up to 125 lbs., handling water not exceeding 210° F., and are available with either vertical or horizontal tanks.

HUGHES PRINTING CO.
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John V. Jirasek Joins Worthington

John V. Jirasek has joined the Worthington Pump and Machinery Corporation as a special representative to the petroleum and chemical industries.

A graduate in Chemical Engineering from the University of Prague, he did post graduate work at the Sorbonne in

John V. Jirasek

Paris. A citizen of the United States Mr. Jirasek has, in the past twenty years, both in the United States and in Europe, been engaged in research, experimental and development work with leading firms in the petroleum field. Recently he was associated with the Compagnie Technique Des Pétroles, European representative for the M. W. Kellogg Company and with the Sharples Corporation of Philadelphia, just prior to which he was connected with E. B. Badger & Sons Company in charge of their European business. He will make his headquarters at the general offices in Harrison, New Jersey.

Pittsburgh Equitable—Merco Nordstrom Hold District Sales Meeting

The final meeting in a series of district gatherings for the salesmen of the Pittsburgh Equitable Meter Company and Merco Nordstrom Valve Company was held at the factory in Pittsburgh during the week of February 19th with representatives from the Pittsburgh and Buffalo Sales Offices attending.

Starting early in January with a meeting in Tulsa, the Company has, at weekly intervals, held sales meetings in each District Office. Each meeting was conducted by Captain A. E. Higgins, Vice President and Sales Manager, who outlined to district men the sales objectives and merchandising plans for 1940. Chief Engineer A. D. MacLean presented the engineering aspects of recently introduced or improved products and open discussions were held under the direction of factory men in order that every salesman would be fully informed.

The representatives from the factory in Pittsburgh conserved time by flying from meeting to meeting in the company plane piloted by Captain Higgins.

Pittsburg Water Heater Corp. Appoints Texas Representative

The Pittsburg Water Heater Corporation announced the appointment, effective March 4th, of Mr. J. H. Schmidt as Direct Factory Representative in the State of Texas for Pittsburg Water Heaters manufactured by the corporation embracing a complete line of automatic storage, instantaneous and multi-coil hot water heaters of all sizes for residences, office buildings, public buildings and institutions.

Mr. Schmidt will make his headquarters at 3300 Main Street, Dallas.

New Valve Slide Chart

A novel slide chart has been prepared by engineers of the Merco Nordstrom Valve Company. It permits engineers to ascertain instantly the figure number of the valve in any available size for any pressure. Instead of leafing through an elaborate catalog, the engineer can use this slide rule chart which, by simple manipulation, locates and classifies the information.

The various tables are made up and remade by sliding a card back and forth under window openings in the slide holder. It simplifies selection of the proper types of Nordstrom lubricated valve to replace other valves of various pressure ratings. The chart includes information on semi-steel, steel and malleable iron valves.

Copies of the "Figure Number" Chart Form V-130 may be obtained from the Merco Nordstrom Valve Co., 400 Lexington Avenue, Pittsburgh, Pa.

Insulation Board: A thirty-six page booklet entitled, "The Story of Insulation Board," giving information regarding this type of insulation has recently been issued by the Insulation Board Institute.

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Cu. Ft. of Gas Per Hour—100-10,000 M
Diameter of Pipe Inches ¾-30
Difference in Absolute Pressure—Lbs. per sq. in. 1-500
Sum of Absolute Pressures—Lbs. per sq. in 2000-20
Specific Gravity 1.5-.35
Length of Pipe—Feet 100-5000
Length of Pipe—Miles 1-250

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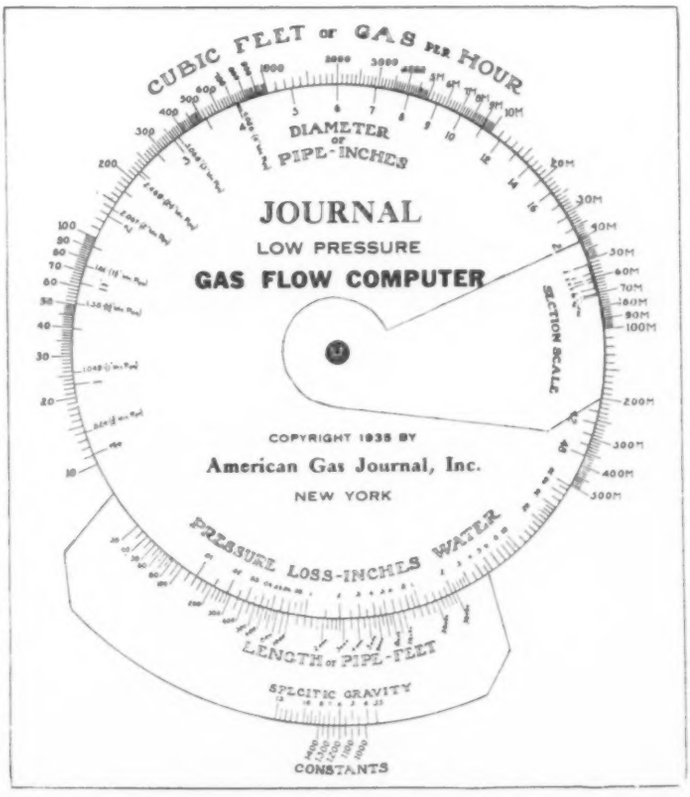

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